CCD-TR820E/TR825E/TR920E/TR930

RMT-708/717

SERVICE MANUAL

US Model
Canadian Model
CCD-TR930
AEP Model
CCD-TR820E/TR825E
UK Model
East European Model
North European Model
Russian Model
CCD-TR820E
E Model
Australian Model
Tourist Model
CCD-TR920E

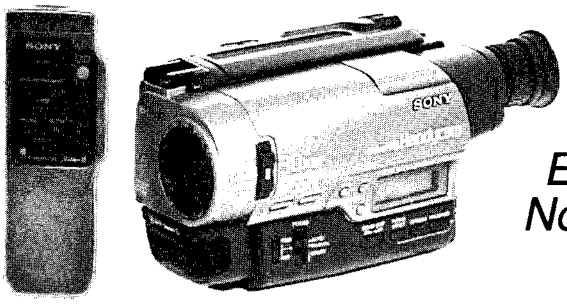


Photo : CCD-TR820E
: RMT-708

Video Hi8
Handycam

B MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL VII" (9-973-801-11).

SPECIFICATIONS

Video camera recorder

System
Video recording system
CCD-TR930 :
Four rotary heads, Helical scanning FM system (separate SP/LP heads)
CCD-TR820E/TR825E/TR920E :
Two rotary heads, Helical scanning FM system
Audio recording system
Rotary heads, FM system
Video signal
CCD-TR930 :
NTSC color, EIA standards
CCD-TR820E/TR825E/TR920E :
PAL colour, CCIR standards
Usable cassette
8 mm video format cassette (Hi8 or standard 8)
CCD-TR930 :
Recording/Playback time (using 120 min. cassette)
SP mode : 2 hours
LP mode : 4 hours
CCD-TR820E/TR825E/TR920E :
Recording/Playback time (using 90 min. cassette)
SP mode : 1 hour 30 min.
LP mode : 3 hours
CCD-TR930 :
Fastforward/rewind time (using 120 min. cassette)
Approx. 5 min.
CCD-TR820E/TR825E/TR920E :
Fastforward/rewind time (using 90 min. cassette)
Approx. 4 min.
Image device
CCD (Charge Coupled Device)
Viewfinder
CCD-TR930/TR920E :
Electronic viewfinder (Color)
CCD-TR820E/TR825E :
Electronic viewfinder (Monochrome)

Lens
Combined power zoom lens
Filter diameter $1\,^{7}/_{16}$ in. (37 mm)
15x (Optical)
30x (Digital)
Focal distance
$^{3}/_{16}$–$2\,^{3}/_{8}$ in. (4.1 – 61.5 mm)
$1\,^{7}/_{8}$–$27\,^{7}/_{8}$ in. (47 – 705 mm)
when converted to a 35 mm still camera
Color temperature
Auto
Minimum illumination
CCD-TR930 :
2 lux (F 1.4)
CCD-TR820E/TR825E/TR920E :
0.7 lux (F 1.4)
illumination range
CCD-TR930 :
2 lux to 100,000 lux
CCD-TR820E/TR825E/TR920E :
0.7lux to 100,000 lux
Recommended illumination
More than 100 lux
(CCD-TR920E only)
- Minimam illumination expresses the light level a camcorder requires to produce a picture. Visible minimum low light expresses the light level to produce a visible signal.

Input and output connectors

S video input/output
(CCD-TR930 only)
S video output
(CCD-TR820E/TR825E/TR920E only)
4-pin mini DIN
Luminance signal : 1 Vp-p, 75 ohms, unbalanced, sync negative
CCD-TR930 :
Chrominance signal : 0.286 Vp-p, 75 ohm, unbalanced
CCD-TR820E/TR825E/TR920E :
Chrominance signal : 0.3 Vp-p, 75 ohm, unbalanced
Video input/output
(CCD-TR930 only)
Video output
(CCD-TR820E/TR825E/TR920E only)
Phono jack, 1 vp-p, 75 ohm, unbalanced, sync negative
Audio input/output
(CCD-TR930 only)
Audio output
(CCD-TR820E/TR825E/TR920E only)
Phono jacks (2 : stereo L and R)
327 mV, (at output impedance 47 kilohm) impedance less than 2.2 kilohm
RFU DC OUT
Special minijack, DC 5 V
Headphone jack
Stereo minijack
LANC control jack
Stereo mini-minijack (ø 2.5 mm)
MIC jack
Minijack, 0.388 mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohm (ø 3.5 to mm)
Stereo type
Intelligent accessory shoe
(CCD-TR930/TR825E/TR920E only)
8-pin connector
LASER LINK
(CCD-TR930 only)
Video/audio : IR space transmission system according to EIAJ (Electric Industries Association of Japan) standards
Audio carrier wave :
L ch 4.3 MHz
R ch 4.8 MHz

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)
Average power consumption
CCD-TR930/TR820E/TR825E :
3.5 W during camera recording
CCD-TR920E :
4.1 W during camera recording
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
–4°F to +104°F (–20°C to +60°C)
Dimensions (Approx.)
CCD-TR930/TR920E :
$4\,^{3}/_{8} \times 4\,^{1}/_{4} \times 7\,^{1}/_{8}$ in.
(108 x 107 x 178 mm) (w/h/d)
CCD-TR820E/TR825E:
108 x 107 x 203 mm
($4\,^{3}/_{8} \times 4\,^{1}/_{4} \times 8$ in) (w/h/d)
Mass (Approx.)
CCD-TR930/TR920E :
1 lb 11 oz (770 g) excluding the battery pack, lithium battery, cassette and shoulder strap
2 lb (920 g) including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap
CCD-TR820E :
780 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette and shoulder strap
930 g (2 lb) including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap

— Continued on next page —

Hi8 VIDEO CAMERA RECORDER

MICROFILM

SONY®

CCD-TR825E :
790 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette and shoulder strap
940 g (2 lb 1 oz) including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap

Microphone
Stereo type

Supplied accessories
See page 3.

AC power adaptor

Power requirements
110 – 240 V AC, 50/60 Hz

Power consumption
25 W

Output voltage
DC OUT : 8.4 V, 1.9 A in operating mode
Battery charge terminal : 8.4 V, 1.4 A in chage mode

Application
Sony battery packs NP-F330, NP-F530, NP-F730, NP-F930 lithium ion type

Operating temperature
32°F to 104°F (0°C to 40°C)

Storage temperature
-4°F to +140°F (-20°C to +60°C)

Dimensions (Approx.)
3 $^1/_4$ x 1 $^{13}/_{16}$ x 6 $^1/_2$ in.
(81x45x163 mm) (w/h/d)
including projecting parts and controls

Masss (Approx.)
1 lb 3 oz (560 g)

Design and specifications are subject to change without notice.

Table for difference of function

Model		CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
Destination		US, CND	AEP,UK,EE,NE,RU	AEP	E, AUS, JE	
Classification		TYPE A	TYPE B	TYPE C	TYPE D	
Remote Commander		RMT-708	RMT-708	RMT-717	RMT-708	
Color System		NTSC	PAL	PAL	PAL	
Lens	Optical	15X	15X	15X	15X	
	Digital	30X	30X	30X	180X	
View Finder		Color EVF	B/W EVF	B/W EVF	Color EVF	Color EVF : with LB-50,VF-111, 112 board and with VC-190 board IC800 B/W EVF : with VF-99 board
VTR REC		O			O	O : with VC-190 board IC130
Accessory Shoe	Intelligent	O		O	O	O : with VC-190 board CN205
	Standard		O			
IR Transmitter		O				O : with MI-29 board IC361
Time Code				O		O : with MM-35 board IC701
Video Head		4	2	2	2	

- Canadian model is abbreviated as CND.
- East European model is abbreviated as EE.
- North European model is abbreviated as NE.
- Russian model is abbreviated as RU.
- Australian model is abbreviated as AUS.
- Tourist model is abbreviated as JE.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

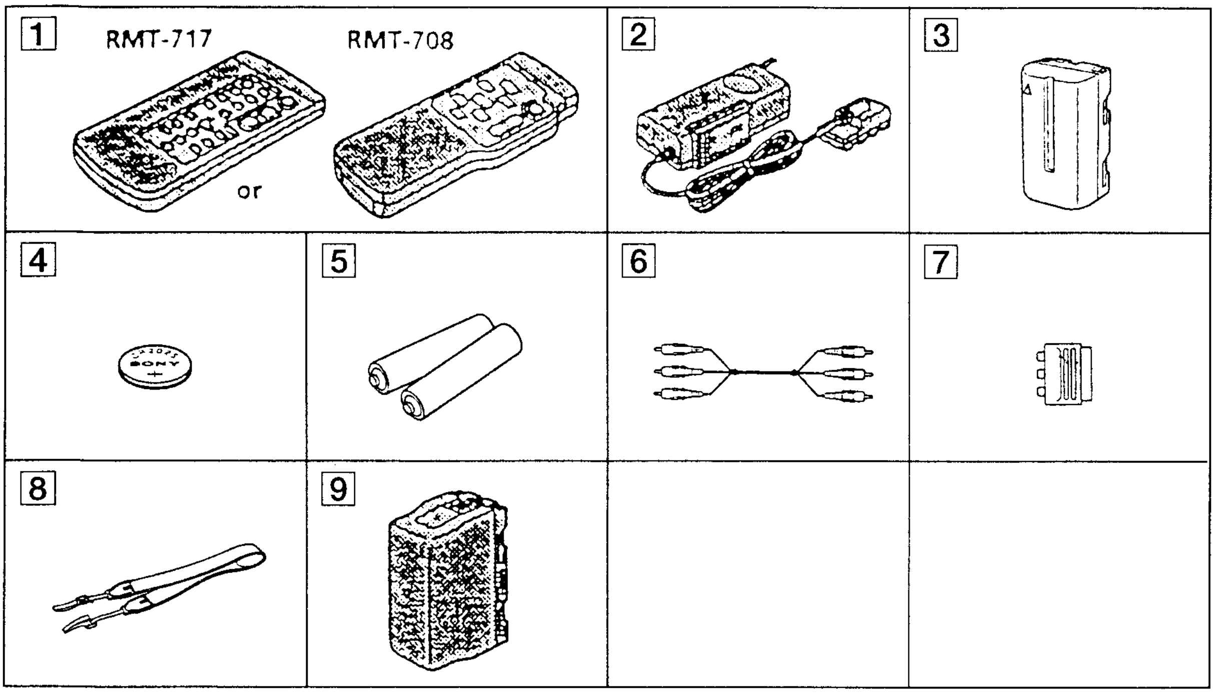
SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Supplied accessories



1 **Wireless Remote Commander (1)**
RMT-708 : CCD-TR820E/TR920E/TR930
RMT-717 : CCD-TR825E

2 **AC power adaptor (1)**
AC-V316 : CCD-TR920E/TR930
AC-V326 : CCD-TR820E/TR825E

3 **Battery pack (1)**
NP-F330 : CCD-TR920E
NP-F530 : CCD-TR820E/TR825E/TR930

4 **CR2025 Lithium Battery**
The lithium battery is already installed in your camcorder.

5 **Size AA (R6) battery for Remote Commander (2)**

6 **A/V connecting cable (1)**

7 **21 pin adaptor**
CCD-TR820E/TR825E

8 **Shoulder strap (1)**

9 **Battery case (1)**

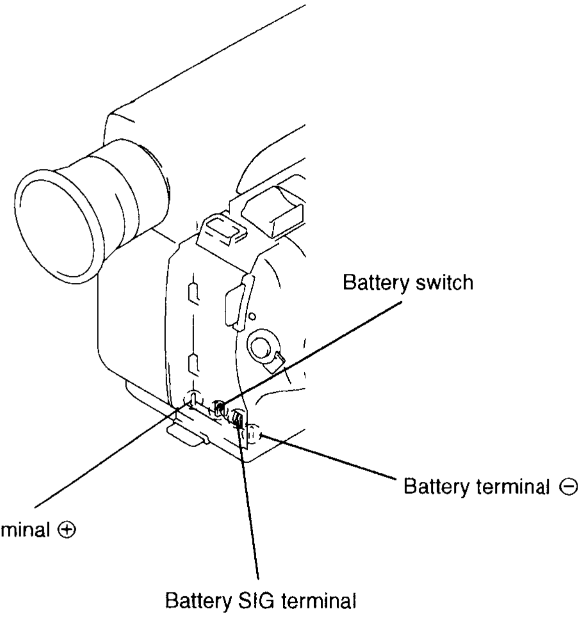
SERVICE NOTE

1. POWER SUPPLY DURING REPAIRS

In this unit, about 25 seconds after power is supplied (8.4V) to the battery terminal using the service power cord (J-6082-223-A), the power is shut off so that the unit cannot operate.
This following two methods are available to prevent this. Take note of which to use during repairs.

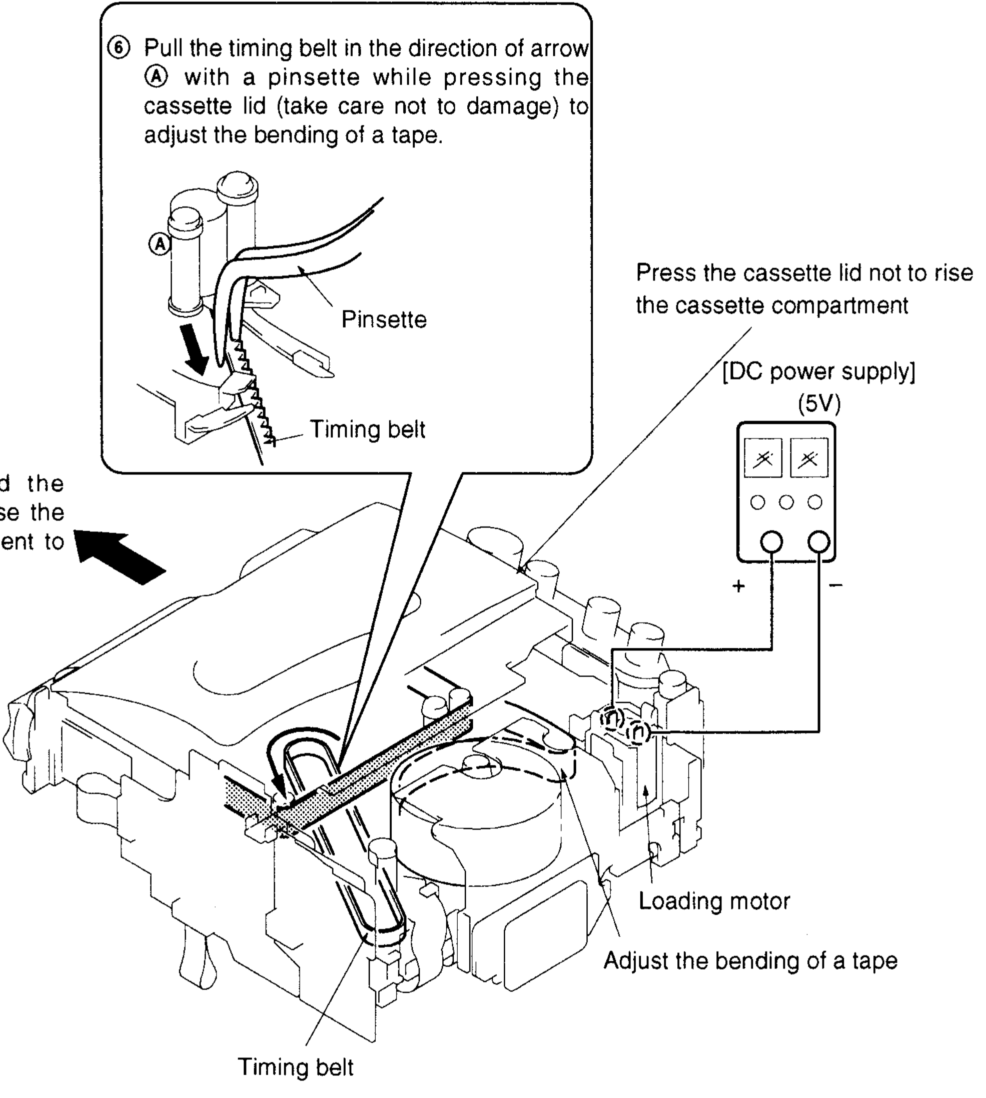
Method 1.
Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the remote commander switch to the "ADJ" side.

Method 2.
Press the following battery switch using adhesive tape, etc.


Battery switch
Battery terminal ⊖
Battery terminal ⊕
Battery SIG terminal

2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to 2-1. to remove the front panel assembly.
② Refer to 2-2. to remove the cabinet (R) assembly.
③ Refer to 2-8. to remove the battery panel assembly.
④ Refer to 2-10. to remove the cabinet (L) assembly.
⑤ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette lid.



⑥ Pull the timing belt in the direction of arrow Ⓐ with a pinsette while pressing the cassette lid (take care not to damage) to adjust the bending of a tape.

⑦ Let go your hold the cassette lid and rise the cassette compartment to take out a cassette.

Ⓐ
Pinsette
Timing belt
Press the cassette lid not to rise the cassette compartment
[DC power supply]
(5V)
+
−
Loading motor
Adjust the bending of a tape
Timing belt

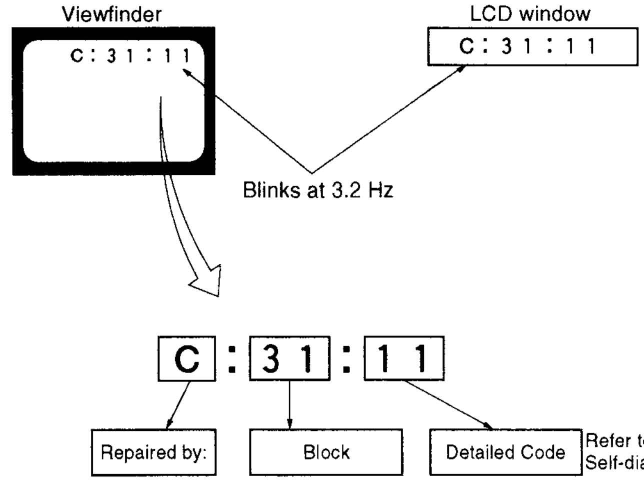
SELF-DIAGNOSIS FUNCTION

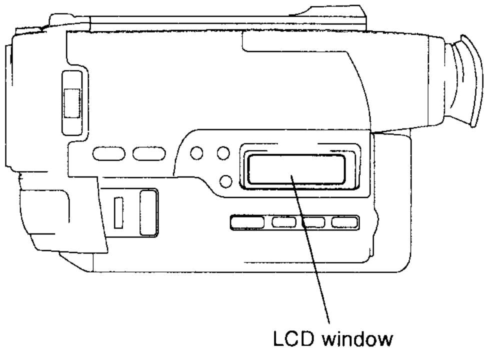
1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD window what to do. This function consists of two display; self-diagnosis display and service mode display.
Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or LCD window shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the "repaired by:", "block" in which the problem occurred, and "detailed code" of the problem.





Refer to page 6, 7
Self-diagnosis Code Table.

C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer

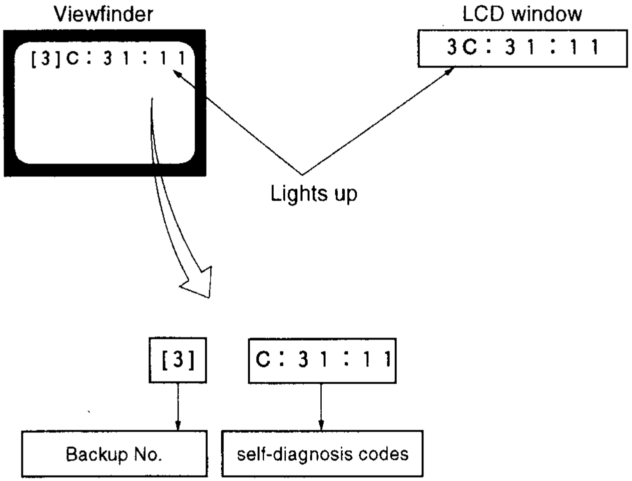
Indicates the appropriate step to be taken.
E.g.
31 .... Reload the tape.
32 .... Turn on power again.

3. Service Mode Display

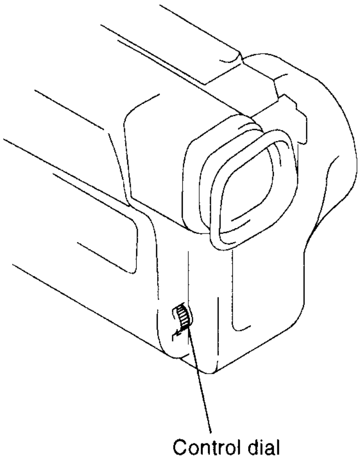
The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the "STOP" key, set the switch from OFF to "CAMERA" or "VTR or PLAYER", and continue pressing the "STOP" key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.



Order of previous errors



3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time	[4] : Occurred fourth time
[2] : Occurred second time	[5] : Occurred fifth time
[3] : Occurred third time	[6] : Occurred the last time

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The self-diagnosis display data will be backed up by the coin-type lithium battery. When this coin-type lithium battery is disconnected, the self-diagnosis data will be lost by initialization.

4. Self-diagnosis Code Table

Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	2	3	0	0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	3	1	1	0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2	0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan	Load the tape again, and perform operations from the beginning.
C	3	1	3	1	FG fault during normal capstan operations	Load the tape again, and perform operations from the beginning.
C	3	1	4	0	FG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	3	1	4	1	PG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	3	1	4	2	FG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	1	4	3	PG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	1	4	4	Phase fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	2	1	0	LOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	1	1	UNLOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	2	T reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	1	FG fault during normal capstan operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	1	PG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	2	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	3	PG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
C	3 2	4 4	Phase fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
E	6 1	0 0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑲ of CN113 of VC-190 board) when focusing is performed when the focus dial is rotated in the focus manual mode and the focus motor drive circuit (IC252, IC255 of VC-190 board) when the focusing is not performed.
E	6 1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ㉑ of CN113 of VC-190 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC252, 255 of VC190 board) when zooming is not performed.
E	6 2	0 0	Handshake correction function does not work well.(With pitch angular velocity sensor output stopped)	Inspect pitch angular velocity sensor (SE452 of SE-61 board) peripheral circuits.
E	6 2	0 1	Handshake correction function does not work well.(With yaw angular velocity sensor output stopped)	Inspect yaw angular velocity sensor (SE451 of SE-61 board) peripheral circuits.

TABLE OF CONTENTS

Section Title Page

SERVICE NOTE

1. Power Supply During Repairs 4
2. To Take out a Cassette when not Eject (Force Eject) 4

SELF-DIAGNOSIS FUNCTION

1. Self-diagnosis Function 5
2. Self-diagnosis Display 5
3. Service Mode Display 5
   3-1. Display Method 5
   3-2. Switching of Backup No. 5
   3-3. End of Display 5
4. Self-diagnosis Code Table 6

1. GENERAL

Using this manual 1-1
Checking supplied accessories 1-1
Charging and Installing the battery pack 1-1
Inserting a cassette 1-2
Camera recording 1-2
Hints for better shooting 1-4
Checking the recorded picture 1-4
Connections for playback 1-4
Playing back a tape 1-4
Using alternative power sources 1-5
Changing the mode settings 1-6
Fade-in and fade-out 1-6
Using the wide mode function 1-7
Enjoying picture effect 1-7
Focusing manually 1-7
Using the PROGRAM AE function 1-8
Shooting with backlighting 1-8
Adjusting the exposure 1-9
Superimposing a title 1-9
Making your own titles 1-10
Recording with the date/time 1-10
Optimizing the recording condition 1-10
Editing onto another tape 1-10
Recording from a VCR or TV 1-11
Releasing the STEADY SHOT function 1-11
Charging the lithium battery in the camcorder 1-11
Resetting the date and time 1-11
Usable cassettes and playback modes 1-12
Tips for using the battery pack 1-12
Maintenance information and precautions 1-13
Using your camcorder abroad 1-13
Trouble check 1-14
Identifying the parts 1-15
Warning indicators 1-17

Section Title Page

2. DISASSEMBLY

2-1. Removal of Front Panel Assembly 2-1
2-2. Removal of Cabinet (R) Assembly 2-1
2-3. Removal of EVF Block Assembly (1) (Color) 2-1
2-4. Removal of EVF Block Assembly (1) (B/W) 2-1
2-5. Removal of EVF Block Assembly (2) (Color) 2-2
2-6. Removal of EVF Block Assembly (2) (B/W) 2-2
2-7. Removal of Control Switch Block (CF DS-TR) 2-3
2-8. Removal of Battery Panel Assembly 2-3
2-9. Removal of Cassette Lid Assembly 2-3
2-10. Removal of Cabinet (L) Assembly 2-3
2-11. Removal of LS Lid Assembly 2-4
2-12. Removal of Lens Device 2-4
2-13. Removal of PJ-80 Board and SE-61 Board 2-4
2-14. Removal of MM-35 Board and DD-95 Board 2-4
2-15. Removal of VC-190 Board 2-5
2-16. Service Position 2-5
2-17. Circuit Boards Location 2-6

3. BLOCK DIAGRAMS

3-1. Overall Block Diagram 3-1
3-2. Camera/Video Block Diagram (1) 3-6
3-3. Camera/Video Block Diagram (2) 3-9
3-4. VTR/Camera Control Block Diagram 3-12
3-5. Servo Block Diagram 3-15
3-6. Mode Control Block Diagram 3-20
3-7. Audio Block Diagram 3-23
3-8. Color EVF Block Diagram 3-28
3-9. B/W EVF Block Diagram 3-31
3-10. Power Block Diagram 3-33

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram 4-1
4-2. Printed Wiring Boards and Schematic Diagrams 4-6
- CD-166 (CCD Imager) Board 4-7
- SE-61 (Steady Shot) Board 4-9
- VC-190 (Camera, Y/C Process, Video Process, REC/PB Head Amp, Servo/System Control, Audio, Video IN/OUT, Mode Control) Board 4-14
- VC-190 (Camera 1) Board 4-19
- VC-190 (Camera 2) Board 4-22
- VC-190 (Camera 3) Board 4-25
- VC-190 (Y/C Process) Board 4-29
- VC-190 (Video Process 1) Board 4-33
- VC-190 (Video Process 2) Board 4-36
- VC-190 (REC/PB Head Amp) Board 4-39
- VC-190 (Servo/System Control) Board 4-43
- VC-190 (Servo) Board 4-47
- VC-190 (Audio) Board 4-51
- VC-190 (Video IN/OUT) Board 4-55
- VC-190 (Mode Control) Board 4-60
- PJ-80 (AV IN/OUT), FP-527 Board 4-63
- VTR Control Switch Block (FK), Control Switch Block (SS8100) 4-68
- MM-35 (LED Switch) Board 4-70
- MI-29 (Stereo Mic, Laser Link) Board 4-76
- MI-29 (Stereo Mic) Board 4-79
- MI-29 (Laser Link) Board 4-82
- LC-56 (LCD CONTROL) Board 4-85
- VF-99 (B/W EVF) Board 4-90
- LB-50 (Back Light) Board 4-93
- VF-111 (Color EVF (Color EVF Model)) Board 4-94
- VF-112 (Color EVF (Color EVF Model)) Board 4-98
- DD-95 (Power) Board 4-103

Section Title Page

5. ADJUSTMENTS

5-1. CAMERA SECTION ADJUSTMENTS 5-1
1-1. Preparations before Adjustment (Camera Section) 5-1
1-1-1. List of Service Tools 5-1
1-1-2. Preparations 5-3
1-1-3. Precautions 5-5
1. Switch settings 5-5
2. Adjusting Procedure 5-5
3. Subject 5-5
1-1-4. Adjusting Remote Commander 5-6
1. Using the adjusting remote commander 5-6
2. Precautions upon using the adjusting remote commander 5-6
1-1-5. Page D Address 5-7
1-1-6. Page F Address 5-9
1-1-7. Page E Address 5-15
1-1-8. Data Processing 5-17
1-2. Initialization of D, E, F Page Data 5-18
1. Initialization of D, E, F Page Data 5-18
2. Modification of D Page Data 5-18
3. Modification of F Page Data 5-19
4. Modification of E Page Data 5-20
1-3. Camera System Adjustment 5-21
1. HALL Adjustment 5-21
2. G-CAM flip Discrimination Adjustment 5-22
3. Flange Back Adjustment 5-22
3-1. Flange Back Adjustment (1) 5-22
3-2. Flange Back Adjustment (2) 5-23
4. Flange Back Check 5-23
5. Picture Frame Setting 5-24
6. Color Reproduction Adjustment 5-25
7. IRIS IN/OUT Adjustment 5-26
8. MAX GAIN Adjustment 5-27
9. Auto White Balance Standard Data Input 5-27
10. Auto White Balance Adjustment 5-28
11. White Balance Check 5-28
12. Velocity Sensor Sensitivity Adjustment 5-30
1-4. Color Electronic Viewfinder System Adjustment 5-31
1. EVF Initial Data Input 5-31
2. VCO Adjustment (VF-112 Board) 5-32
3. Bright Adjustment (VF-112 Board) 5-32
4. Contrast Adjustment (VF-112 Board) 5-33
5. Backlight Comsumption Current Adjustment (VF-111 Board) 5-33
6. White Balance Adjustment (VF-112 Board) 5-34
7. AUTO ON Level Adjustment (VF-111 Board) 5-34
1-5. Monochrome Electronic Viewfinder System Adjustment 5-35
1-5-1. Horizontal Slant Check 5-35
1-5-2. Centering Adjustment 5-35
1-5-3. Focus Adjustment 5-35
1-5-4. Aberration Adjustment 5-36
1-5-5. Horizontal Amplitude Adjustment (VF-99 Board) 5-36
1-5-6. Vertical Amplitude Adjustment (VF-99 Board) 5-37
1-5-7. Brightness Adjustments (VF-99 Board) 5-37
1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check 5-37

5-2. MECHANICAL SECTION ADJUSTMENT 5-38
2-1. Operating without a Cassette 5-38
2-2. Tape path Adjustment 5-38
1. Preparations for adjustments 5-38

5-3. VIDEO SECTION ADJUSTMENTS 5-39
3-1. Preparations before Adjustment 5-39
3-1-1. Equipments to be Used 5-39
3-1-2. Precautions in Adjustment 5-40
3-1-3. Connector for Adjustments 5-40
3-1-4. Connecting the Equipments 5-41
3-1-5. Checking the Input Signals 5-42
1. S VIDEO input 5-42
2. VIDEO input 5-42
3-1-6. How to Set the REC Mode in the Model Without REC Switch (AEP, UK Model) 5-43
3-1-7. Alignment Tape 5-43
3-1-8. Input/Output Level and Impedance 5-35
3-1-9. Recording Mode (Standard 8/Hi8) switching 5-45
3-1-10. Service Mode 5-45
1. Test mode setting 5-45
2. Emergency Memory Address 5-46
2-1. EMG CODE (Emergency Code) 5-46
2-2. MSW Codes 5-47
3. Bit value discrimination 5-48
4. Input/output selection check 5-48
5. Condensation, head clogging check 5-49
6. VTR state check (1) 5-49
7. VTR state check (2) 5-49
8. VTR state check (3) 5-50
9. Record of Use Check 5-50
3-2. System Control System Adjustments 5-51
1. Initialization of D, E, F Page Data 5-51
2. Battery End Adjustment (VC-190 Board) 5-51
3-3. Servo System Adjustments 5-52
1. CAP FG Offset Adjustment (VC-190 Board) 5-52
2. Switching Position Adjustment (VC-190 Board) 5-52
3. NTSC LP Mode Switching Position Adjustment (VC-190 Board) (CCD-TR930) 5-53
3-4. Video System Adjustments 5-53
1. 28 MHz Origin Oscillation Adjustment (VC-190 Board) 5-53
2. Filter fo Adjustment (VC-190 Board) 5-54
3. Y OUT Level Adjustment (VC-190 Board) 5-54
4. C OUT Level Adjustment (VC-190 Board) 5-55
5. RP Filter fo Adjustment (VC-190 Board) 5-55
6. AFC fo Adjustment (VC-190 Board) 5-56
7. NTSC REC Y Current Adjustment (VC-190 Board) (CCD-TR930) 5-56
8. PAL REC Y Current Adjustment (VC-190 Board) (CCD-TR820E/TR825E/TR920E) 5-57
9. NTSC REC L Level Adjustment (VC-190 Board) (CCD-TR930) 5-57
10. PAL REC L Level Adjustment (VC-190 Board) (CCD-TR820E/TR825E/TR920E) 5-58
11. REC C Current Adjustment (VC-190 Board) 5-59
3-5. IR Transmitter Adjustments (CCD-TR930) 5-60
1. IR Video Carrier Frequency Adjustment (MI-29 Board) 5-60
2. IR Video Deviation Adjustment (MI-29 Board) 5-60
3. IR Audio Deviation Adjustment (MI-29 Board) 5-61
3-6. Audio System Adjustment 5-62
1. 1.5 MHz Deviation Adjustment (VC-190 Board) 5-63
2. 1.7 MHz Deviation Adjustment (VC-190 Board) 5-63
3. BPF fo Adjustment (VC-190 Board) 5-64
3-7. Arrangement Diagram for Adjustment Parts 5-66

6. REPAIR PARTS LIST

6-1. Exploded Views 6-1
6-1-1. Cabinet (L) Block Assembly 6-1
6-1-2. Front Panel Block Assembly 6-2
6-1-3. Cabinet (R) Block Assembly 6-3
6-1-4. Color EVF Block Assembly (TR920E/TR930) 6-4
6-1-5. B/W EVF Block Assembly (TR820E/TR825E) 6-5
6-1-6. Main Boards Assembly 6-6
6-1-7. Battery Panel Block Assembly and CCD Block Assembly 6-7
6-1-8. Lens Device (VCL-4214VA) 6-8
6-1-9. Cassette Compartment Assembly 6-9
6-1-10. LS Chassis Assembly 6-10
6-1-11. Mechanism Chassis Assembly 6-11
6-2. Electrical Parts List 6-12

There is the color reproduction standard frame at the back of the book.

SECTION 1
GENERAL

This section is extracted from instruction manual of CCD-TR930.

Before you begin

Using this manual

As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
As indicated with ♪ in the illustrations, you can hear the beep sound to confirm your operation.

Note on TV color systems

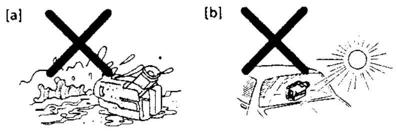
TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

Precaution on copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on camcorder care

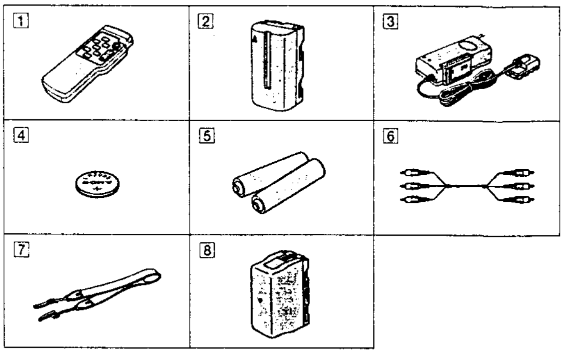
- **The LCD screen and/or the color viewfinder are manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue or green in color) that constantly appear on the LCD screen or in the viewfinder. These points are normal in the manufacturing process and do not affect the recorded picture in any way. Over 99.99% are operational for effective use.**
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction, and sometimes this malfunction cannot be repaired **[a]**.
- Never leave the camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight **[b]**.



Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

Checking supplied accessories

Check that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander** (1) (p.66)

2 **NP-F330 Battery pack** (1) (p.6)

3 **AC-V316/V316A AC power adaptor** (1) (p.6, 22)

4 **CR2025 Lithium Battery** (1) (p.46)
The lithium battery is already installed in your camcorder.

5 **Size AA (R6) battery for Remote Commander** (2) (p.67)

6 **A/V connecting cable** (1) (p.18, 44)

7 **Shoulder strap** (1) (p.68)

8 **Battery case** (1) (p.23)

Getting started

Charging and installing the battery pack

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC power adaptor.

This camcorder operates with the "InfoLITHIUM" battery. If you use any other battery to operate your camcorder, the camcorder may not operate or the battery life may be shortened.

"InfoLITHIUM" is a trade mark of Sony Corporation.

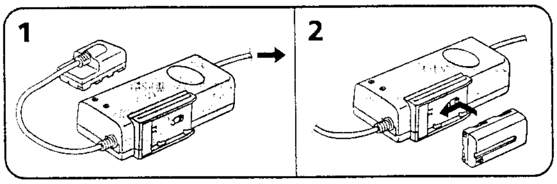
Charging the battery pack

Charge the battery pack on a flat surface without vibration.

(1) Connect the power cord to a wall outlet.

(2) Align the surface of the battery pack indicated by the ▶ mark with the edge of the terminal shutter of the AC power adaptor. Then fit and slide the battery pack in the direction of the arrow. The CHARGE lamp (orange) lights up. Charging begins.

When the CHARGE lamp goes out, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack in place for approximately one hour. Unplug the unit from the wall outlet, then remove the battery pack and install it into the camcorder. You can also use the battery pack before it is completely charged.



Charging time

Battery pack	NP-F330 (supplied)	NP-F530	NP-F730	NP-F930
Charging time* (min.)	160 (100)	170 (110)	250 (190)	330 (270)

The time required for a normal charge is indicated in parentheses.
* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor (full charge). (Lower temperatures require a longer charging time.)

Charging and installing the battery pack

Battery lifee

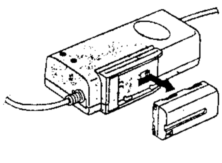
Battery pack	NP-F330 (supplied)	NP-F530	NP-F730	NP-F930
Continuous recording time* (min.)	70 (65)	150 (135)	305 (275)	480 (435)
Typical recording time* (min.)	40 (35)	85 (75)	170 (155)	270 (245)

Numbers before the parentheses indicate the time when you use a fully charged battery.
Numbers in the parentheses indicate the time when you use a normal charged battery.
* Approximate continuous recording time indoors.
** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

Note on remaining battery time indication during recording
Remaining battery time is displayed in the viewfinder. It may not be dispayed properly, however, depending on the conditions and circumstances of use.

To remove the battery pack

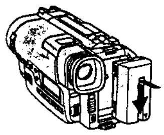
Slide the battery pack in the direction of the arrow.



Notes on charging the battery pack
- The CHARGE lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the CHARGE lamp does not light, disconnect the power cord. After about one minute, reconnect the power cord again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.
- When a fully charged battery pack is installed, the CHARGE lamp will light once, then go out.

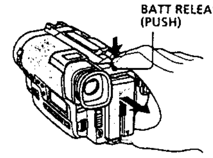
Installing the battery pack

Align the grooves of the battery pack with the receptacles of the camcorder and slide the battery pack down until it catches on the battery release lever and clicks. Attach the battery pack to the camcorder securely.



To remove the battery pack

While pressing the BATT (battery) RELEASE (PUSH) button, slide the battery pack in the direction of the arrow.

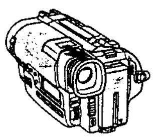


You can look at the demonstration of the functions available with this camcorder (p.26).

Using the camcorder with the finder slid out or lifted up

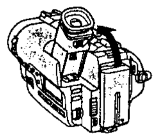
When NP-F730 or NP-F930 is installed

When you install NP-F730 or NP-F930, slide out the viewfinder for more comfortable camera recording.



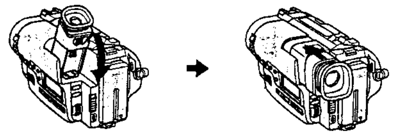
When you record in a low angle

Lift up the viewfinder.



To restore the viewfinder

Push the viewfinder down or slide it into the camcorder.



Note on the battery pack
Do not carry the camcorder by grasping the battery pack.

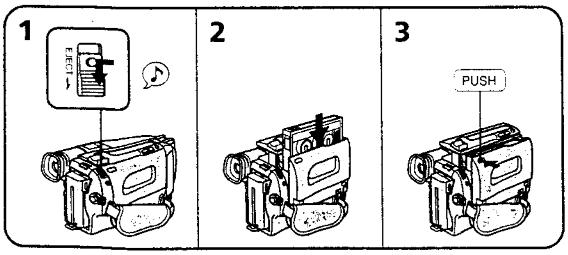
Inserting a cassette

Make sure that the power source is installed. When you want to record in the Hi8 system, use Hi8 video cassette **Hi8**.

(1) While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow. The cassette compartment automatically lifts up and opens.

(2) Insert a cassette with the window facing out.

(3) Close the cassette compartment by pressing the PUSH mark on the cassette compartment. The cassette compartment automatically goes down.

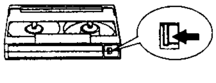


To eject the cassette

While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow.

To prevent accidental erasure

Slide the tab on the cassette to expose the red mark. If you insert the cassette with the red mark exposed and close the cassette compartment, the beeps sound for a while. If you try to record with the red mark exposed, the ⊡ and ≜ indicators flash in the viewfinder, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.



Basic operations

Camera recording

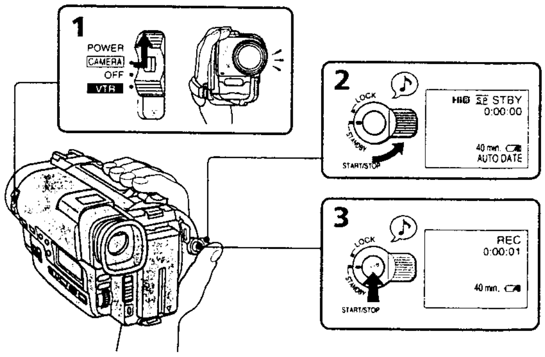
Make sure that the power source is installed, a cassette is inserted and that the START/STOP MODE switch is set to ≜ . Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.
When you use the camcorder for the first time, power on it and reset the date and time to your time before you start recording. (p.47)
The date is automatically recorded for 10 seconds after you start recording (**AUTO DATE feature**). This feature works only once a day.
To save battery power, the picture in the viewfinder appears only when you bring your face close to the viewfinder with STANDBY up (**Finder power save**).

(1) While pressing the small green button on the POWER switch, set it to CAMERA.

(2) Turn STANDBY up.

(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears. The camera recording/battery lamps located on the front light up. The AUTO DATE indicator appears.

You can also select Recording mode, SP (standard play) mode or LP (long play) mode. Set REC MODE in the menu system according to the length of your planned recording before you start.

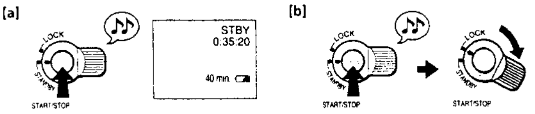


To stop recording momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

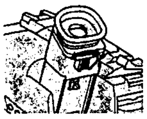
To finish recording [b]

Press START/STOP again. Turn STANDBY down and set the POWER switch to OFF. Then, eject the cassette and remove the battery pack.



To focus the viewfinder lens

If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens. Turn the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus.



Note on the lighting aperture

If direct sunlight enters the lighting aperture, the picture in the viewfinder appears brighter. When this happens, colors in the viewfinder may change.

Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down and up again. To start recording, press START/STOP.

Notes on recording mode

- This camcorder records and plays back in SP (standard play) mode and in LP (long play) mode. However, the playback quality in LP mode will not be as good as that in SP mode.
- When you record a tape in LP mode on this camcorder, we recommend you to play the tape on this camcorder. When you play back the tape on other camcorders or VCRs, noise may occur on a picture or sound.
  Noise may occur also when you play on this camcorder the tape recorded in LP mode on other camcorders or VCRs.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

Notes on the tape counter

- The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.
- If the tape is recorded in SP and LP modes mixed, the tape counter shows incorrect recording time. When you intend to edit the tape using the tape counter as a guide, record in same (SP or LP) mode.

Note on the beep sound

As indicated with ♪ in the illustration, a beep sounds when you turn the power on or when you start recording, and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder.
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Note on the AUTO DATE feature

The clock is set to East Coast Standard Time at the factory. You can reset the clock in the menu system. You can change the AUTO DATE settings by selecting ON or OFF in the menu system. The AUTO DATE feature shows the date automatically once a day.
However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set it to ON again in the menu system.

Notes on finder power save

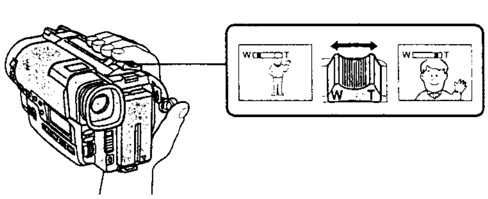
- The recording continues even when the picture in the viewfinder disappears during recording.
- If you set VF PW-SAVE to off in the menu system, the picture in the viewfinder does not disappear even when you turn your face away from the viewfinder.

When moving from indoors to outdoors (or vice versa)

Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Using the zoom feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)



Zooming speed (Variable speed zooming)

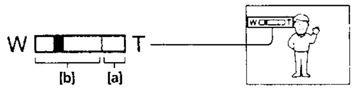
Move the power zoom lever a little for a slower zoom, move it further for a faster zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 2 $^5/_8$ feet (about 80cm) away from the lens surface in the telephoto position, or about $^1/_2$ inch (about 1cm) away in the wide-angle position.

Notes on digital zoom

- More than 15x zoom is performed digitally (x30), and the picture quality deteriorates as you go toward the "T" side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system.
- The right side **[a]** in the power zoom indicator shows the digital zooming zone, and the left side **[b]** shows the optical zooming zone. If you set the D ZOOM function to OFF, the **[a]** zone disappears.



Selecting the SATRT/STOP mode

Your camcorder has two modes besides normal start/stop mode. These modes enable you to take a series of quick shots resulting in a lively video.

(1) Set the START/STOP MODE switch to the desired mode.

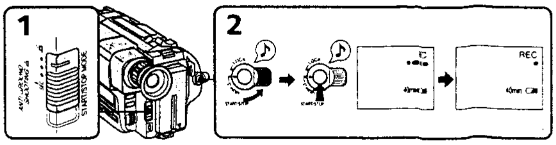
  ♙ : Recording starts when you press START/STOP, and stops when you press it again (normal mode).

  ANTI GROUND SHOOTING ⏊ : The camcorder records only while you press down START/STOP so that you can avoid recording unnecessary scenes.

  5 SEC: When you press START/STOP, the camcorder records for 5 seconds and then stops automatically.

(2) Turn STANDBY up and press START/STOP. Recording starts.

If you selected 5 SEC, five dots appear in the viewfinder. The dots disappear at a rate of one per second. When five seconds elapse and all the dots disappear, the camcorder switches to Standby mode automatically.



To extend the recording time in 5 SEC mode

Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you pressed START/STOP.

To return to normal recording

Set the START/STOP MODE switch to ♙. If you set the switch while recording, recording continues.

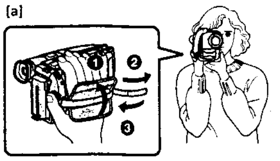
Note on 5-SEC and ANTI GROUND SHOOTING ⏊ mode

You cannot use FADER if you select 5 SEC or ANTI GROUND SHOOTING ⏊.

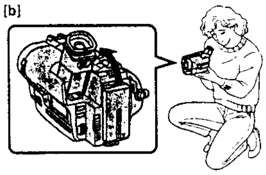
Hints for better shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

[a]



[b]



- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb **[a]**.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. Be sure not to touch the built-in microphone.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Lift the viewfinder up to record from a low position **[b]**.

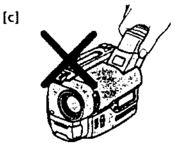
Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder.
When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm). Otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

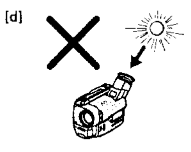
Cautions on the viewfinder

- Do not pick up the camcorder by the viewfinder **[c]**.
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be damaged. Be careful when placing the camcorder under sunlight or by a window **[d]**.

[c]



[d]



Checking the recorded picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

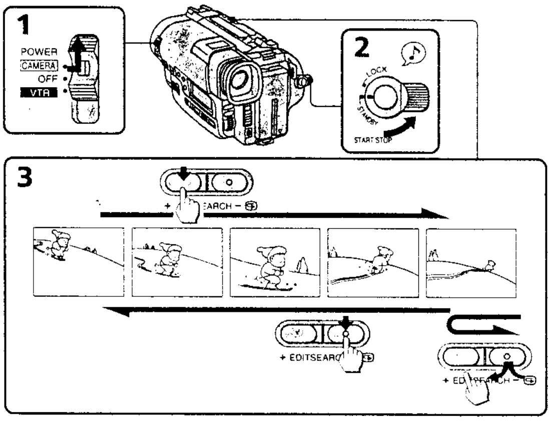
(1) While pressing the small green button on the POWER switch, set it to CAMERA.

(2) Turn STANDBY up.

(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion play back (**Rec Review**).

You can monitor the sound from the headphones.

Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Edit Search**).



To stop playback

Release EDITSEARCH.

To begin re-recording

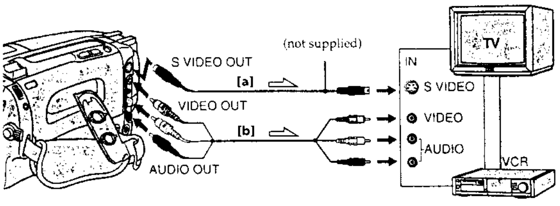
Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

Connections for playback

You can use this camcorder as a VCR by connecting it to your TV for playback. There are some ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use house current for the power source.

Connecting directly to a VCR/TV with Video/Audio input jacks

Open the jack cover. If your TV is already connected to a VCR, connect the camcorder to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.
If your VCR or TV has an S video jack, connect using the S video cable (not supplied) **[a]** to obtain a high quality picture.



⇨ : Signal flow

If you are going to connect the camcorder using the S video cable (not supplied) **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.

If your VCR or TV is a monaural type

Connect only the white plug for audio on both the camcorder and the VCR or the TV. With this connection, the sound is monaural even in stereo mode.

To connect to a VCR or TV without Video/Audio input jacks

Use the RFU-95UC RFU adaptor (not supplied).

Playing back a tape

Using the AV cordless IR receiver – LASER LINK

Once you connect the AV cordless IR receiver (not supplied) having the ⚡ LASER LINK mark to your TV or VCR, you can easily view the picture on your TV. For details, refer to the instruction manual of the AV cordless IR receiver. LASER LINK is a system which transmits and receives a picture and sound between video equipment having the ⚡ mark by using infrared rays. LASER LINK is a trademark of Sony Corporation.

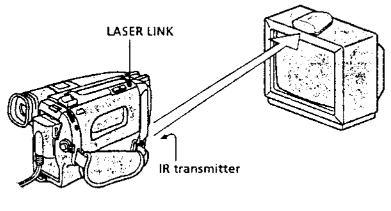
(1) Connect the receiver to the TV, and turn on the IR receiver power.

(2) Turn on the TV power, and set the TV/VCR selector on the TV to VCR.

(3) Set the POWER switch to VTR and press LASER LINK on the camcorder. The LASER LINK button indicator lights up.

(4) Press ▷ on the camcorder. The picture appears on the TV screen.

(5) Point the IR transmitter on the camcorder toward the infrared sensor on the IR receiver so that the blue background clearly appears on the TV.



To cancel the LASER LINK function

Press LASER LINK.

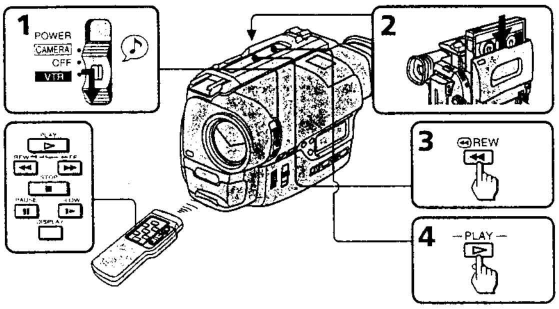
You can monitor the playback picture in the viewfinder. You can also monitor a picture on a TV screen, after connecting the camcorder to a TV or VCR.

(1) While pressing the small green button on the POWER switch, set it to VTR. The video control buttons light up.

(2) Insert the recorded tape with the window facing out.

(3) Press ◀◀ to rewind the tape.

(4) Press ▷ to start playback.



To stop playback, press □.
To rewind the tape, press ◀◀.
To fast-forward the tape rapidly, press ▶▶.

Using the remote commander

You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the size AA (R6) batteries.

To display the viewfinder screen indicators on the TV

Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

To monitor the sound while viewing the playback picture in the viewfinder
Connect headphones (not supplied) to the 🎧 jack.

Note on the lens cover
The lens cover does not open when the POWER switch is set to VTR. Do not open the lens cover manually. It may cause malfunction.

Various playback modes

To view a still picture (playback pause)

Press ❚❚ during playback. To resume playback, press ❚❚ or ▷.

To locate a scene (picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To view the picture at 1/5 speed (slow playback)

Press ❚▶ on the Remote Commander during playback. To resume normal playback, press ▷. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

To select the playback sound

Change the "HiFi SOUND" mode setting in the menu system.

Notes on playback
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.

Advanced operations

Using alternative power sources

You can choose any of the following power sources for your camcorder: battery pack, the house current, alkaline battery and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	Supplied AC power adaptor
Outdoors	Battery pack	InfoLITHIUM battery NP-F330 (supplied), NP-F530, NP-F730, NP-F930
	Size AA (LR6) Alkaline battery	Battery case (supplied)
In the car	12 V or 24 V car battery	Sony car battery charger DC-V515A

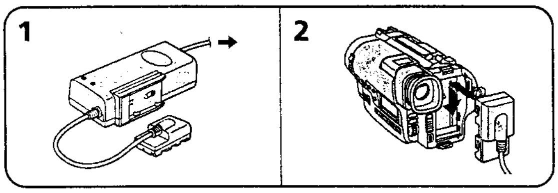
Note on power sources
Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

Using the house current

To use the supplied AC power adaptor:

(1) Connect the AC power cord to a wall outlet.

(2) Slide the connecting plate down into the guides at the rear of the camcorder until it clicks.



To remove the connecting plate
The connecting plate is removed in the same way as battery pack.

WARNING
The power cord must only be changed at a qualified service shop.

PRECAUTION
The set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Notes on the VTR/CAMERA lamp
- The VTR/CAMERA lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the VTR/CAMERA lamp does not light, disconnect the power cord. After about one minute, reconnect the power cord.

Using alkaline batteries

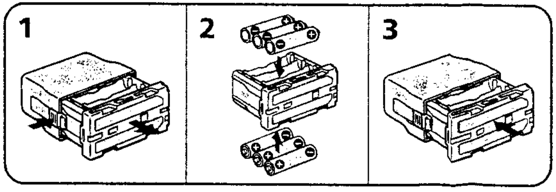
Use the battery case (supplied) and six size AA (LR6) Sony Alkaline batteries (not supplied).

(1) Remove the battery holder from the battery case.

(2) Insert six new alkaline batteries into the battery holder, following the marking on the holder to be sure the batteries are installed in the correct direction.

(3) Insert the battery holder with the alkaline batteries.

(4) Insert the battery case with the alkaline batteries to the battery mounting surface of the camcorder in the same way as the battery pack.



Battery Life

Using alkaline batteries at 77°F (25°C).

Continuous recording time	165 min.
Typical recording time	95 min.

Notes
- You may not use the battery case in cold environment.
- The battery life may be shorter depending on the using environment.
- The above battery lives are estimates. The battery life may be shortened depending on the storage condition of the battery before being purchased and temperature.

When the battery case is installed
Slightly raise the viewfinder when you use the camcorder.

To remove the battery case
The battery case is removed in the same way as the battery pack.
When you replace the batteries, be sure to remove the battery case from the camcorder to prevent malfunction.

Using a car battery

Use Sony DC-V515A car battery charger (not supplied). Connect the car battery cord to the cigarette lighter socket of a car (12 V or 24 V). Connect the car battery charger and to the camcorder in the same way as you connect the AC power adaptor

To remove the car battery charger
The car battery charger is removed in the same way as the AC power adaptor.

This mark indicates that this product is a genuine accessory for Sony video products.
When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Changing the mode settings

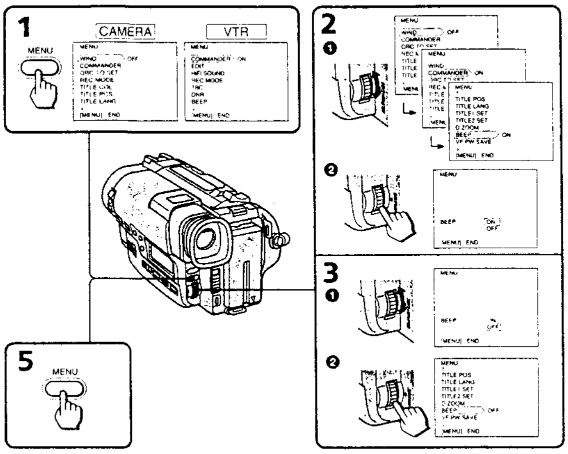
You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu.

(2) Turn the control dial to select the desired item, then press the dial.

(3) Turn the control dial to select the desired mode, then press the dial. If you want to change the other modes, repeat steps 2 and 3.

(4) Press MENU to erase the menu display.



Selecting the mode setting of each item

Items for both CAMERA and VTR modes

COMMANDER <ON/OFF>
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

REC MODE* <SP/LP>
- Select SP when recording in SP (standard play) mode.
- Select LP when recording in LP (long play) mode.

BEEP* <ON/OFF>
- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

VF PW-SAVE* <ON/OFF>
- Select ON so that the picture in the viewfinder appears only when you bring your face close to the viewfinder.
- Select OFF when you want to display the picture in the viewfinder all the time.

Items for CAMERA mode only

WIND <ON/OFF>
- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

ORC TO SET* <ORC ON>
Select this item and press the START/STOP button to automatically adjust the recording condition to get the best possible recording. If you have already perform this function, "ORC ON" is displayed.

TITLE COL* <WHITE/YELLOW/VIOLET/RED/CYAN/GREEN/BLUE>
Select the color of the title.

TITLE POS* <CENTER/BOTTOM>
- Select CENTER to center the title in the picture.
- Select BOTTOM to position the title at the bottom of the picture.

TITLE LANG* <ENGLISH/FRANÇAIS/ESPAÑOL/PORTUGUÊS>
Select the language of the preset titles.

TITLE 1 SET* TITLE 2 SET*
Select to store your own original titles.

D ZOOM* <ON/OFF>
- Select ON to activate digital zooming.
- Select OFF not to use the digital zoom. The camera goes back to 15x zoom.

REC LAMP* <ON/OFF>
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

AUTO DATE* <ON/OFF>
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF not to record the date.

CLOCK SET*
Select this item to reset the date or time.

DEMO MODE* <ON/OFF>
- Select ON to make the demonstration appear without cassette.
- Select OFF to deactivate the demonstration mode.

Notes on DEMO MODE
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you set the POWER switch to CAMERA without inserting a cassette. Note that you cannot select STBY of DEMO MODE in the menu system.
- You cannot select DEMO MODE when a cassette is inserted in the camcorder.
- If you insert a cassette during the demonstration, the demonstration stops. You can start recording as usual. DEMO MODE automatically returns to STBY.

To look at the demonstration at once
Eject the cassette, if inserted. Select ON of DEMO MODE and erase the menu display. The demonstration will begin. When you turn off the camcorder once, DEMO MODE automatically returns to STBY.

Items for VTR mode only

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

HiFi SOUND <STEREO/1/2>
- Normally select STEREO.
- Select 1 or 2 to play back a dual sound track tape.

TBC* <ON/OFF>
- Select ON to correct for jitter.
- Select OFF not to correct for jitter.
  The picture may not be steady when played back.

Note on TBC setting
Set TBC to OFF when playing back:
- A tape you have dubbed over.
- A tape on which you recorded the signal of a TV game or similar machine.

If the playback picture fluctuates while you hold the camcorder, set TBC to OFF.

DNR* <ON/OFF>
- Select ON to reduce noise.
- Select OFF to not reduce noise.

The following settings work only during playback
EDIT, HiFi SOUND, TBC, and DNR.

* These settings are retained even when the battery is removed, as long as the lithium battery is in place.

Fade-in and fade-out

You can fade in or out to give your recording a professional appearance.
When fading in, the picture gradually fades in from black or mosaic while the sound increases. When fading out, the picture gradually fades to black or mosaic while the sound decreases.

When fading in [a]

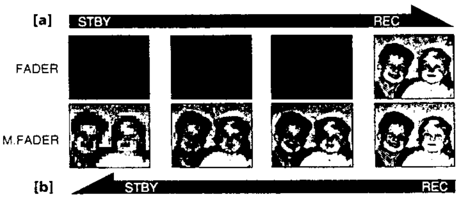
(1) While the camcorder is in Standby mode, press FADER. The fade indicator starts flashing.

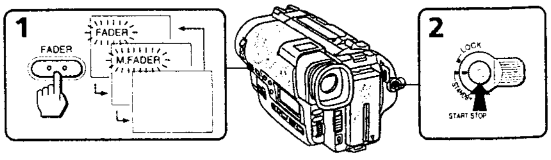
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When fading out [b]

(1) During recording, press FADER. The fade indicator starts flashing.

(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.





To cancel the fade-in/fade-out function

Before pressing START/STOP, press FADER until the fade indicator disappears.

When the date or time indicator is displayed
The date or time indicator does not fade in or fade out.

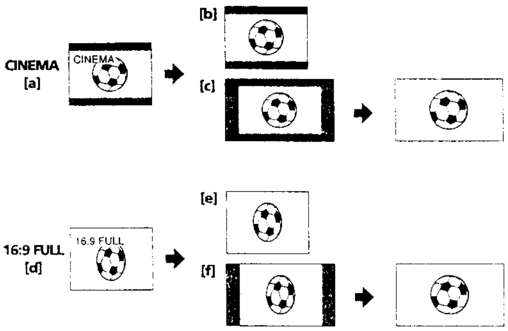
Notes on titles
- While fading in or fading out, you cannot superimpose a title.
- While a title is displayed, the picture does not fade in or out.

When START/STOP MODE is set to 5SEC or ANTI GROUND SHOOTING ⊥
You cannot use the fader function.

Using the wide mode function

Selecting the desired mode

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).

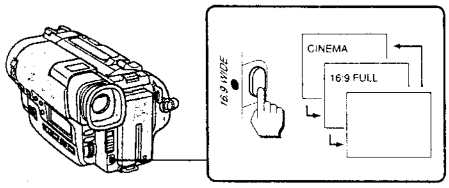


CINEMA
Black bands appear at the top and the bottom of the screen, and the viewfinder **[a]** and a normal TV screen **[b]** look wide. You can also watch the picture without black bands on a wide-screen TV **[c]**. When you select the CINEMA mode, DATE, TIME and the battery indicators are displayed above.

16:9 FULL
The picture in the viewfinder **[d]** or on a normal TV **[e]** is horizontally compressed. You can watch the picture of normal images on a wide-screen TV **[f]**.

Using the wide mode function

While the camcorder is in Standby mode, press 16:9 WIDE repeatedly so that the desired mode indicator appears in viewfinder. While recording, you cannot change the mode.



To cancel wide mode
Press 16:9 WIDE repeatedly until the wide mode indicator disappears.

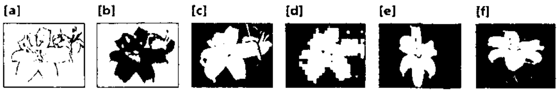
To watch the tape recorded in wide mode
To watch the tape recorded in CINEMA mode, set the screen mode of the wide-screen TV to zoom mode. To watch the tape recorded in 16:9 FULL mode, set it to full mode. For details, refer to the instruction manual of your TV.
Note that the picture recorded in 16:9 FULL mode looks compressed on a normal TV.

Notes on wide mode
- If wide mode is set to 16:9 FULL, the Steady Shot function does not work and the " ☝ " indicator flashes.
- When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.
- The wide mode is canceled automatically 5 minutes after you remove the power source.
- When recording, you cannot change the mode.

Enjoying picture effect

Selecting picture effect

You can make pictures like those of television with the Picture Effect function.



PASTEL [a]
Emphasize contrast and gives picture animation-like colors.

NEG. ART [b]
The color and brightness of the picture is reversed.

SEPIA
The picture is sepia.

B&W
The picture is monochrome (black and white).

SOLARIZE [c]
The light intensity is more clear, and the picture looks like an illustration.

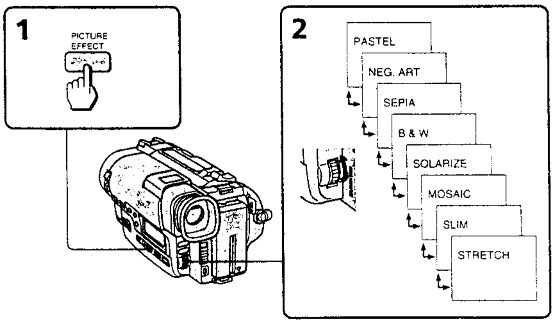
MOSAIC [d]
The picture is mosaic.

SLIM [e]
The picture expands vertically.

STRETCH [f]
The picture expands horizontally.

Using picture effect function

(1) Press PICTURE EFFECT.
(2) Turn the control dial to select the desired picture effect mode.



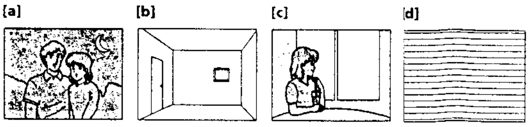
To turn off picture effect
Press PICTURE EFFECT. The indicator in the viewfinder goes out.

Note on the picture effect
When you turn the power off, the camcorder returns automatically to normal mode.

Focusing manually

When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.



- Insufficient light **[a]**
- Subjects with little contrast — walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing manually

Focusing manually

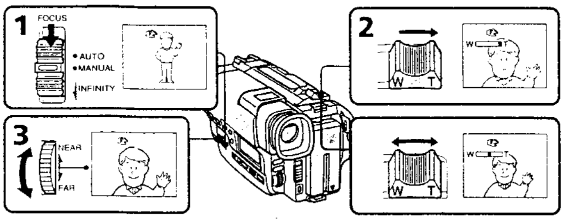
When focusing manually, first focus in telephoto before recording, and then reset the shot length.

(1) Set FOCUS to MANUAL. The ⚙ indicator appears in the viewfinder.

(2) Move the power zoom lever to the "T" side until the lever reaches the end.

(3) Turn the NEAR/FAR dial to achieve a sharp focus. Be sure not to touch the built-in microphone when you turn the NEAR/FAR dial.

(4) Set the desired shot length using the power zoom lever.



To return to autofocus mode

Set FOCUS to AUTO. The ⚙ indicator in the viewfinder disappears.

Shooting in relatively dark places

Shoot at wide-angle after focusing in the telephoto position.

To record a very distant subject

Push FOCUS down to INFINITY. The lens focuses on the most distant subject while FOCUS is held down. When it is released, manual focus mode is resumed. Use this function when shooting through a window or a screen, to focus on a most distant subject.

Note on manual focusing

The following indicators may appear:

▲: when recording a very distant subject.

●: when the subject is too close to focus on.

Using the PROGRAM AE function

Selecting the best mode

You can select one of six PROGRAM AE (Auto Exposure) modes to suit your shooting situation, referring to the following.

● Spotlight mode

For subjects in spotlight, such as at the theatre or a formal event.

Soft portrait mode

For zooming in on a still subject in telephoto mode, or for a subject behind an obstacle such as a screen. Creates a soft background for subjects such as people or flowers, and faithfully reproduces skin color.

Sports lesson mode

For recording fast-moving subjects such as in tennis or golf games.

Beach & ski mode

For people or faces in strong light or reflected light, such as at a beach in midsummer or on a snowy winter mountain.

Sunset & moon mode

For recording subjects in dark environnments such as sunsets, fireworks, neon signs, or general night views.

Landscape mode

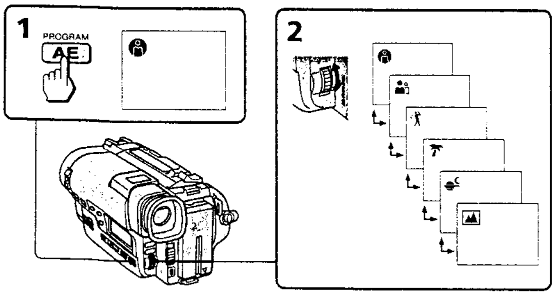
For distant subjects such as mountains or when recording a subject behind an obstacle such as a window or screen.

Using the PROGRAM AE function

Using the PROGRAM AE function

(1) Press PROGRAM AE.

(2) Turn the control dial to select the desired PROGRAM AE mode.



To turn off program AE

Press PROGRAM AE.

Notes on focus setting

- In the Spotlight, Sports lesson and Beach & Ski modes, you cannot take close-ups because the camcorder is set to focus only on subjects in the middle to far distance.
- In the Sunset & Moon and Landscape modes, the camcorder is set to focus only on distant subjects.

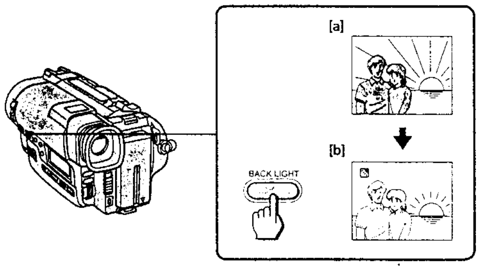
Note on PROGRAM AE

You can adjust the exposure while recording using PROGRAM AE mode

Shooting with backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ◩ indicator appears in the viewfinder.



[a] Subject is too dark because of backlight.

[b] Subject becomes bright with backlight compensation.

After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ◩ indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:

- On snow, e.g. at a ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

To make a fine adjustment

You can adjust the exposure manually. However, when you adjust the exposure manually, BACK LIGHT does not operate.

Adjusting the exposure

When to adjust the exposure

Adjust the exposure manually under the following cases.

[a]

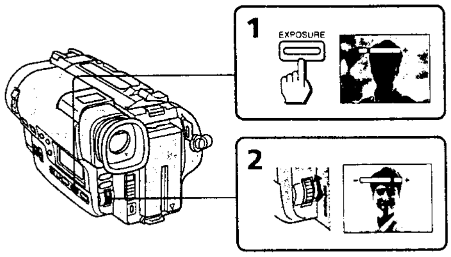
[b]

[a]
- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b]
- Bright subject and dark background
- To record the darkness faithfully

Adjusting the exposure

(1) Press EXPOSURE.
(2) Turn the control dial to adjust the brightness.


1
EXPOSURE
2
-
+

To return to automatic exposure mode

Press EXPOSURE again.

Shooting with the sun behind you
If the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shooting in the dark
We recommend you to use a video light (not supplied). To get the best color, you must maintain a sufficient light level.

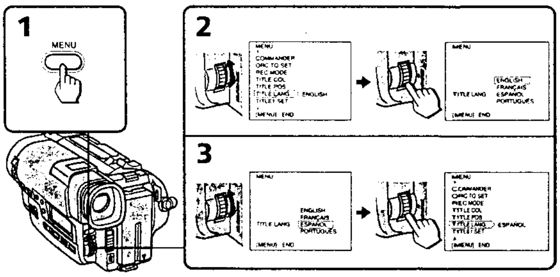
When you adjust the exposure manually
- BACK LIGHT does not appear.
- If you press PROGRAM AE, the camcorder automatically returns to automatic exposure mode.

Superimposing a title

You can select one of eight preset titles. You can also select the language, position, and color of titles in the menu system.

Selecting the language

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select TITLE LANG, then press the dial.
(3) Turn the control dial to select the desired language, then press the dial.
(4) Press MENU to erase the menu display.


1
MENU
2
MENU
COMMANDER
ORC TO SET
REC MODE
TITLE COL
TITLE POS
TITLE LANG
ENGLISH
TITLE1 SET
[MENU] END
MENU
TITLE LANG
ENGLISH
FRANÇAIS
ESPAÑOL
PORTUGUÊS
[MENU] END
3
MENU
TITLE LANG
ENGLISH
FRANÇAIS
ESPAÑOL
PORTUGUÊS
[MENU] END
MENU
COMMANDER
ORC TO SET
REC MODE
TITLE COL
TITLE POS
TITLE LANG
ESPAÑOL
TITLE1 SET
[MENU] END

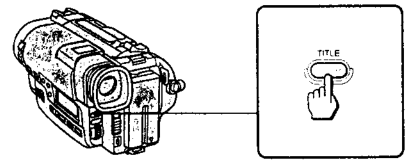
Using titles

To add the title from the beginning

(1) While the camcorder is in Standby mode, press TITLE repeatedly until the desired title appears.
Each time a new title appears, it flashes. When the desired title appears, wait for it to stop flashing.
(2) Press START/STOP to start recording.
(3) When you want to stop recording the title, press TITLE.

To add the title while you are recording

(1) While the camcorder is in Standby mode, press TITLE repeatedly until the desired title appears.
Each time a new title appears, it flashes.
(2) When the desired title appears, wait for it to stop flashing, and press TITLE again to erase the title from the display.
(3) Press START/STOP to start recording.
(4) When you reach the point where you want to add the title, press TITLE.
(5) When you want to stop recording the title, press TITLE again.



Titles cycle as follows:
Original title 1 → Original title 2 → HELLO! → HAPPY BIRTHDAY → HAPPY HOLIDAYS → CONGRATULATIONS! → OUR SWEET BABY → WEDDING → VACATION → THE END
After "THE END" the title indicator goes off once and returns to Original title 1 again.
The titles are displayed in the language you selected in the menu system.

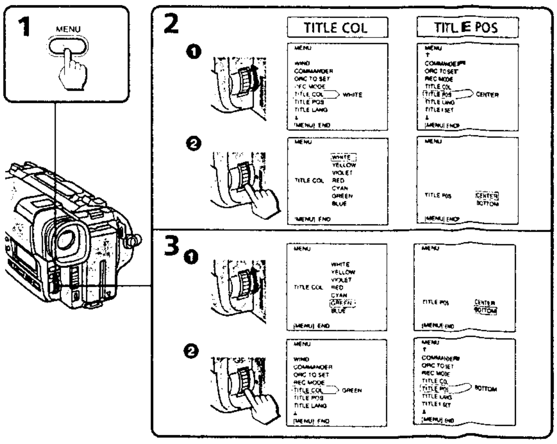
Notes on superimposing a title
- If you have not made any original titles, they are not displayed.
- You cannot select a title while you are recording.
- FADER does not work while the title is displayed.
- A title, a date and time cannot be recorded at the same time.
- When fading in or out you cannot display a title.
- If you display the menu while superimposing a title, the title is not recorded while the menu is being displayed.

To select the color of the title

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select TITLE COL, then press the dial.
(3) Turn the control dial to select the desired color, then press the dial.
You can choose from the following 7 colors:
WHITE ←→ YELLLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE
(4) Press MENU to erase the menu display.

To select the position of the title

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select TITLE POS, then press the dial.
(3) Turn the control dial to select the desired position (CENTER or BOTTOM), then press the dial.
(4) Press MENU to erase the menu display.


1
MENU
2
TITLE COL
TITLE POS
❶
MENU
WIND
COMMANDER
ORC TO SET
REC MODE
TITLE COL
WHITE
TITLE POS
TITLE LANG
[MENU] END
CENTER
❷
TITLE COL
WHITE
YELLOW
VIOLET
RED
CYAN
GREEN
BLUE
TITLE POS
CENTER
BOTTOM
3
❶
❷
GREEN
BOTTOM

Making your own titles

You can make up to two titles and store them in the camcorder. Eject the cassette before you begin. Your title can have up to 22 letters.

(1) While the camcorder is in Standby mode, press MENU to display the menu.

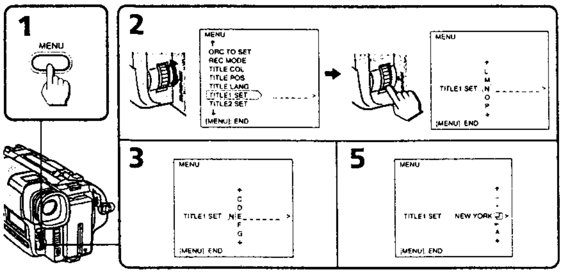
(2) Turn the control dial to select TITLE1 SET or TITLE2 SET, then press the dial.

(3) Turn the control dial to select the desired character, then press the dial.
To move the cursor to the character on the left side, select ←.

(4) Repeat step 3 until you finish the title.

(5) When you are finished, turn the control dial to select ↵ , then press the dial.

(6) Press MENU to erase the menu display.



To edit the title you have stored

In step 2, select TITLE 1 SET or TITLE 2 SET, whichever title you want to edit is stored in. Then change the title.

If you do nothing more than 5 minutes while a cassette is in the camcorder

The power goes off automatically. Turn STANDBY down once, turn it again up and proceed from step 1.

When you enter 22 letters in step 4

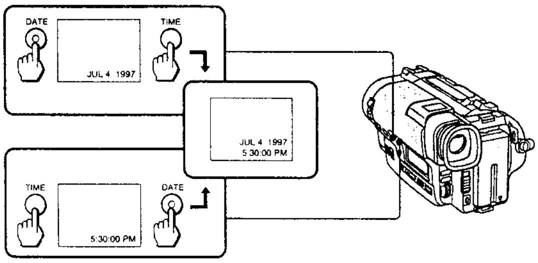
The title is stored automatically. (You do not need to got to step 5.)

To delete a title

At the leftmost character position, select ↵ and press the control dial. Do not erase the title by selecting empty spaces. If you do so, a title full of empty spaces is stored.

Recording with the date/time

Before you start recording or during recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. Press DATE (or TIME), then press TIME (or DATE) to display date and time together.
The clock is already set to East Coast Standard Time at the factory. You can reset the clock in the menu system.



To stop recording with the date and/or time

Press DATE and/or TIME again. The date and/or time indicator disappears. The recording continues.

Note on the date or time indicator

If you press DATE or TIME while you are recording in CINEMA mode, the indicators in the viewfinder move upwards.

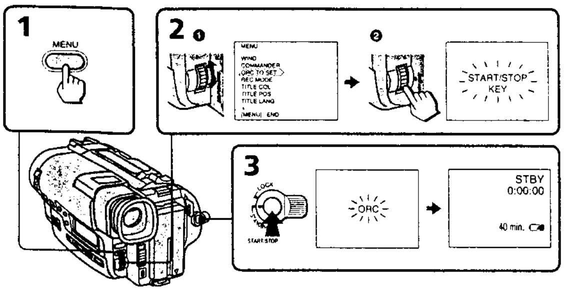
Optimizing the recording condition

Use this feature to check the tape condition before recording, so that you can get the best possible picture (ORC).

(1) While the camcorder is in Standby mode, press MENU to display the menu.

(2) Turn the control dial to select ORC TO SET, then press the dial.
"START/STOP KEY" starts flashing.

(3) Press START/STOP.
The ORC indicator starts flashing. The camcorder takes about 10 seconds to check the tape condition and then returns to Standby mode.



If the cassette has been ejected

Every time you eject the cassette, ORC is canceled. Set ORC again.

To check if you have performed ORC

If the ORC indicator lights up in the display window, the tape condition has been checked.

Notes on the ORC function

- When you set ORC TO SET, the recording on the tape is erased for about 0.1 second so that the camcorder can check the tape condition. Be careful when you use a recorded tape. The 0.1 second blank is erased if you record from the point where you set ORC TO SET for more than 2 seconds, or if you record over the blank.
- You cannot use this function on a tape with the red mark on the cassette exposed.
- While the ORC function is turned on, you cannot operate the power zoom lever.

Editing onto another tape

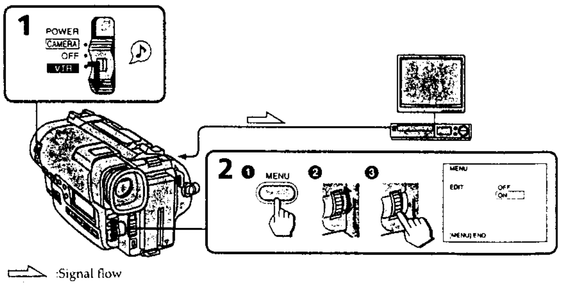
You can create your own video program by editing with any other 8 8 mm, Hi8 Hi8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC, β Betamax or ED Beta ED Betamax VCR that has video/audio inputs.

Before editing

Connect the camcorder to the VCR using the supplied A/V connecting cable.
Set the input selector on the VCR to LINE, if available.

(1) While pressing the small green button on the POWER switch, slide it to VTR.

(2) Set EDIT to ON in the menu system.



:Signal flow

Starting editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.

(2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then press ❚❚ to set the camcorder in playback pause mode.

(3) On the VCR, locate the recording start point and set the VCR in recording pause mode.

(4) Press ❚❚ on the camcorder and VCR simultaneously to start editing.

To edit more scenes

Repeat steps 2 to 4.

To stop editing

Press □ on both the camcorder and the VCR.

Note on the DISPLAY function

If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Note on Fine Synchro Edit

If you connect a video deck that has the Fine Synchro Edit feature to the LANC ⊄ jack of the camcorder, using a LANC cable (not supplied), the edit will be even more precise.

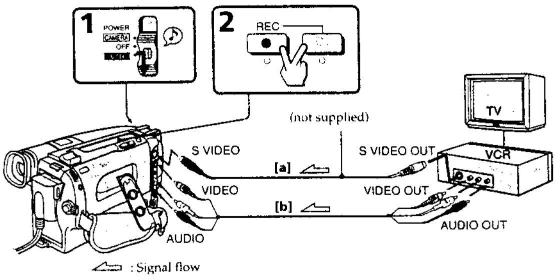
Recording from a VCR or TV

You can record a tape from another VCR or a TV program from a TV that has audio/video outputs. Connect the camcorder to the VCR or TV.

(1) While pressing the small green button on the POWER switch, slide it to VTR.

(2) Press REC ● and the button on the right together at the point where you want to start recording.

In recording and recording pause mode, S VIDEO and VIDEO/AUDIO jacks automatically work as input jacks.
If your VCR or TV has an S video jack, connect using the S video cable (not supplied) **[a]** to obtain a high quality picture.



If your VCR or TV is a monaural type, connect only the white plug for audio on both the camcorder and the VCR or TV.
If you are going to connect the camcorder using the S video cable (not supplied) **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.

To check the picture from a VCR or TV before recording

Press **II** after pressing ●. You can check the picture in the viewfinder.

To stop recording

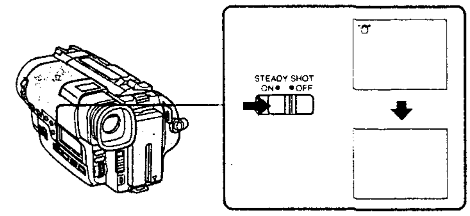
Press □.

Releasing the STEADY SHOT function

When you shoot, the indicator appears in the viewfinder. This indicates that the Steady Shot function is working and the camcorder compensates for camera-shake.

You can release the Steady Shot function when you do not need to use the Steady Shot function. Do not use the Steady Shot function when shooting a stationary object with a tripod.

Set STEADY SHOT to OFF. The indicator goes off.



To activate the Steady Shot function again

Set STEADY SHOT to ON. The indicator appears in the viewfinder.

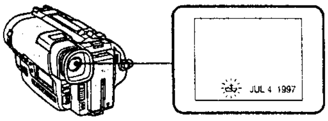
Notes on the Steady Shot function

- The Steady Shot function will not correct excessive camera-shake.
- When you switch the Steady Shot function on or off, the exposure may fluctuate.
- Steady Shot does not operate when you select the 16:9 FULL mode. If you set STEADY SHOT to ON, the indicator flashes.

Additional Information

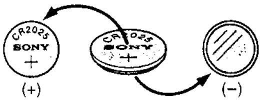
Changing the lithium battery in the camcorder

Your camcorder is supplied with a lithium battery installed. When the battery becomes weak or dead, the indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.** Discard used batteries according to the manufacturer's instructions.
The lithium battery for the camcorder lasts for about 1 year under normal operation. (The lithium battery that comes installed at the factory may not last 1 year.)



Notes on lithium battery

- **Keep the lithium battery out of the reach of children.**
  Should the battery be swallowed, consult a doctor immediately.
- Wipe the battery with a dry cloth to assure a good contact.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Note that the lithium battery has a positive (+) and a negative (–) side as illustrated. **Be sure to insert the lithium battery with the positive side facing out.**



WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

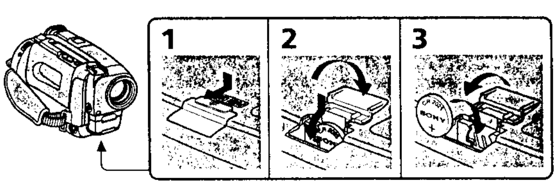
Changing the lithium battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.

(1) Open the lid of the lithium battery compartment.

(2) Push the lithium battery down once and pull it out from the holder.

(3) Install the lithium battery with the positive (+) side facing out. Close the lid.



Resetting the date and time

You can set the date and time in the menu system.

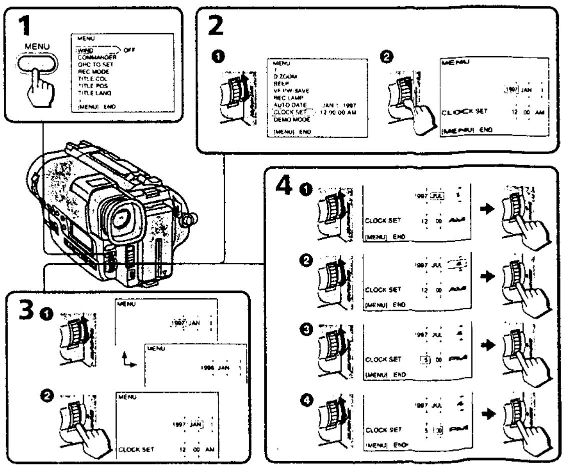
(1) Press MENU to display the menu in the viewfinder.

(2) Turn the control dial to select CLOCK SET, then press the dial.

(3) Turn the control dial to adjust the year, and then press the dial.

(4) Set the month, day, hour and minutes by turning the control dial and then pressing the dial.

(5) Press MENU to erase the menu display.



To correct the date and time setting

Repeat the above procedure.

To check the preset date and time

Press DATE to display the date indicator in the viewfinder.
Press TIME to display the time indicator.
When you press the same button again, the indicator goes off.

The year indicator changes as follows:

1997 ⟷ 1998 ⟷ ···· ⟶ 2029

Note on the time indicator

The internal clock of this camcorder operates on a 12-hour cycle.

- 12:00 AM stands for midnight.
- 12:00 PM stands for noon.

Usable cassettes and playback modes

Selecting cassette types

This Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures.
You can use Hi8 video and standard 8 mm cassettes. When you use a Hi8 video cassette, the recording is in the Hi8 system. When you use a standard 8mm cassette, the recording is in the standard 8 mm system. You cannot record on standard 8 mm cassettes in the Hi8 system.
If you are going to play back the tape using a standard 8mm video recorder/player, you should use standard 8 mm cassettes.

When you play back

The playback mode (SP/LP) and system (Hi8/standard 8 mm) are selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Note on AFM HiFi stereo

When you play back a tape, the sound will be in monaural if:

- You record the tape using this camcorder, then play it back on an AFM HiFi monaural video recorder/player.
- You record the tape on an AFM HiFi monaural video recorder, then play it back on this camcorder.

Foreign 8 mm video

Because the TV color systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to the list of "Using your camcorder abroad" to check the TV color system of foreign countries.

Tips for using the battery pack

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in a cold environment

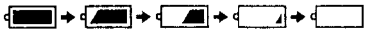
Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in a cold environment.

To save battery power

Turn STANDBY down when not recording to save battery power.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to replace the battery pack

While you are using your camcorder, the remaining battery indicator in the viewfinder decreases gradually as battery power is used up. The remaining time in minutes also appears.



When the remaining battery indicator reaches the lowest point, the ▭ indicator appears and starts flashing in the viewfinder.
When the ▭ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack has been replaced.

Notes on the rechargeable battery pack

Caution

Never leave the battery pack in temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.

The battery pack heats up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern and is normal.

Battery pack care

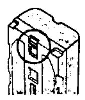
- **Remove the battery pack from the camcorder after using it,** and keep it in a cool place. When the battery pack is installed to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF. This shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery pack right before using the camcorder.

Be sure to observe the following

- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor try to disassemble the battery pack.
- Do not expose the battery pack to any mechanical shock.

The switch on the battery pack

When the switch is supplied with the battery pack you can use it to find whether the battery pack is charged or not. Set the switch to the "green mark" position when charging is completed. (When removed from the charging adaptor, the switch exposes the green mark. When removed from your camcorder, no mark is indicated.)



The life of the battery pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature

You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C). Lower temperatures require a longer charging time.

Notes on the "InfoLITHIUM" battery pack

What is the "InfoLITHIUM"

The "InfoLITHIUM" is a lithium ion battery pack which can exchange data with compatible video equipment about its battery consumption. Sony recommends that you use the "InfoLITHIUM" battery pack with video equipment having the ⓘ INFOLITHIUM mark.
When you use this battery pack with video equipment having the ⓘ INFOLITHIUM mark, the video equipment will indicate the remaining battery time in minutes*. However, if you use it with video equipment not having this mark, the remaining battery capacity will not be indicated in minutes.

* The indication may not be accurate depending on the condition and environment which the equipment is used under.

How the battery consumption is displayed

The power consumption of the camcorder changes depending on its use, such as how the autofocusing is working.
While checking the condition of the camcorder, the "InfoLITHIUM" battery pack measures the battery consumption and calculates the remaining battery power. If the condition changed drastically, the remaining battery indication may suddenly decrease or increase by more than 2 minutes.
Even if 5 to 10 minutes is indicated as the battery remaining time in the viewfinder, the ▭ indicator may also flash under some condition.

To obtain more accurate remaining battery indication

Set the camcorder to recording standby mode and point towards a stationary object. Do not move the camcorder for 30 seconds or more.

- If the indication seems incorrect, use up the battery pack and then recharge it fully (Full charge[1]). Note that if you have used the battery in a hot or cold environment for long time, or you have repeated charging many times, the battery pack may not be able to show the correct time even after being fully charged.
- After you have used the "InfoLITHIUM" battery pack with an equipment not having the ⓘ INFOLITHIUM mark, make sure that you use up the battery pack on the equipment having the ⓘ INFOLITHIUM mark and then recharge fully.

Why the remaining battery indication does not match the continuous recording time in the operation manual

The recording time is affected by the environmental temperature and conditions. The recording time becomes very short in a cold environment. The continuous recording time in the operation manual is measured under the condition of using a fully charged (or normal charged[2]) battery pack in 77°F (25°C). As the environmental temperature and condition are different when you actually use the camcorder, the remaining battery time is not same as the continuous recording time in the operation manual.

[1] Full charge: Charging for about 1 hour after the CHARGE lamp of the AC power adaptor goes off.

[2] Normal charge: Charging just until the CHARGE lamp of the AC power adaptor goes off.

Notes on charging

A brand-new battery pack

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Recharge the battery pack whenever you like

You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. Then recharge the battery pack before use.

Notes on the terminals

If the terminals (metal parts on the back) are not clean, the battery charge duration will be shortened.

When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack a few times. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Notes on the battery case

- **Use only with alkaline batteries. You cannot use the battery case with manganese batteries or size AA (LR6) rechargeable NiCd batteries.**
- **Using with Sony alkaline batteries is preferable.**
- Battery life is remarkably shorter in a cold environment (lower than 50°F/10°C).
- Keep the metal part clean. If it gets dirty, wipe it with a soft cloth.
- Do not disassemble or convert the battery case.
- Do not expose the battery case to any mechanical shock.
- During recording, the battery case heats up. This is not cause for concern.
- Prevent the electrode in the battery case from coming in contact with a metal object.
- If you will not use the battery case for a long time, detach the battery case from the camcorder and remove the batteries from the battery case.

If battery leakage occurred
- Wipe off the liquid in the battery case carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

Maintenance information and precautions

Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Please, take the following precautions.

Inside the camcorder

If there is moisture inside the camcorder, the beep sounds and the ▣ indicator flashes. If this happens, none of the functions except cassette ejection will work. Open the cassette compartment, turn off the camcorder, and leave it about 1 hour. When ⏏ indicator flashes at the same time, the cassette is inserted in the camcorder. Eject the cassette, turn off the camcorder, and leave also the cassette about 1 hour. The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

On the lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation

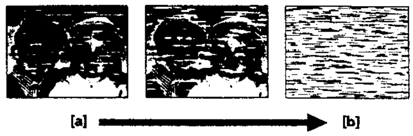
When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.

(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Video head cleaning

To ensure normal recording and clear pictures, clean the video heads. When the ⊗ indicator and "▲ CLEANING CASSETTE" message appear one after another in the viewfinder or playback pictures are "noisy" or hardly visible, the video heads may be dirty.



[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times in one session.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the Sony V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

Precautions

Camcorder operation

- Operate the camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

On handling tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape and if the recording tab is in or out.

Camcorder care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction, and sometimes this malfunction cannot be repaired.

AC power adaptor

Charging
- Use only a lithium ion type battery pack.
- Place the battery pack on a flat surface without vibration during charging.
- The battery pack will get hot during charging. This is normal.

Others
- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the power cord, pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following.
- Be sure to insert the batteries in the correct direction.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- The batteries slowly discharge while not in use.
- Do not use a battery that is leaking.

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

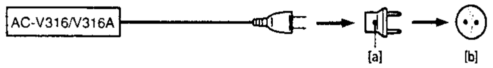
Using your camcorder abroad

Each country or area has its own electric and TV color systems. Before using your camcorder abroad, check the following points.

Power sources

You can use your camcorder in any country or area with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Use a commercially available adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Difference in color systems

This camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system-based TV.
Check the following list.

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

SECAM system
Bulgaria, Czech Republic, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Trouble check

If you run into any problem using the camcorder, use the following table to troubleshoot the problem. Should the difficulty persist, disconnect the power source and contact your Sony dealer or local authorized Sony service facility.

Camcorder

Power

Symptom	Cause and/or Corrective Action
The power is not on.	• The battery pack is not installed. → Install the battery pack. (p. 8) • The battery is dead. → Use a charged battery pack. (p. 6) • The AC power adaptor is not connected to a wall outlet. → Connect the AC power adaptor to a wall outlet. (p. 22) • You use other types of battery except an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack (p. 6)
The power goes off.	• While being operated in CAMERA mode, the camcorder has been in Standby mode for more than 5 minutes. → Turn STANDBY down once and then up again. (p. 12) • The battery is dead. → Use a charged battery pack. (p. 6) • If VF PW-SAVE is set to ON, the picture disappears automatically when you turn your face away from the viewfinder. → Bring your face close to the viewfinder within 1/2 inch (1 cm). Or set VF PW-SAVE to OFF. (p. 25)
The battery pack is quickly discharged.	• The ambient temperature is too low. (p. 49) • The battery pack has not been charged fully. → Charge the battery pack again. (p. 6) • The battery pack is completely dead, and cannot be recharged. → Use another battery pack. (p. 8) • You use other types of battery except an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack (p. 6)
The beep sounds when the battery is attached.	• The battery pack is discharged during a long period of storage. → Charge the battery pack again. (p.6)
When you turn off the power, the lens makes a noise.	• The camcorder is not malfunctioning.

Operation

Symptom	Cause and/or Corrective Action
START/STOP does not operate.	• The tape is stuck to the drum. → Eject the tape. (p. 10) • The tape has run out. → Rewind the tape or use a new one. (p. 20) • The POWER switch is set to VTR. → Set it to CAMERA. (p. 11) • The tab on the cassette is out (red). → Use a new tape or slide the tab. (p.10)

Trouble check

Symptom	Cause and/or Corrective Action
Recording stops in a few seconds.	• The START/STOP MODE switch is set to 5 SEC or ANTI GROUND SHOOTING ⊥ . → Set it to ⊥ . (p. 15)
The cassette cannot be removed from the holder.	• The battery is dead. → Use a charged battery pack or the AC power adaptor. (p. 6, 22)
▣ and ⏏ indicators flash and no function except for cassette ejection works.	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 52)
The counter, date or time indicator is flashing.	• You pressed DATE and TIME together for more than 2 seconds. → The camcorder is not malfunctioning. You may start recording. Flashing will stop soon. • The lithium battery is weak or dead. → Replace the lithium battery with a new one. (p. 46)
The tape does not move when a video control button is pressed.	• The POWER switch is set to CAMERA or OFF. → Set it to VTR. • The tape has run out. → Rewind the tape or use a new one. (p. 20)
The SteadyShot function does not activate.	• STEADY SHOT is set to OFF. → Set STEADY SHOT to ON. (p. 45) • The SteadyShot function does not work when the wide mode is set to 16:9 FULL.
The autofocusing function does not work.	• FOCUS is set to MANUAL. → Set it to AUTO. (p. 31) • Shooting conditions are not suitable for autofocus. → Set FOCUS to MANUAL to focus manually. (p. 31)
The fader function does not activate.	• START/STOP MODE is set to 5 SEC or ANTI GROUND SHOOTING ⊥ . → Set it to ⊥ . (p. 15) • A title is displayed. → Stop superimposing the title.
No sound or only a low sound is heard when playing back a tape.	• The stereo tape is played back with HiFi SOUND set to 1 or 2 in the menu system. → Set to STEREO in the menu system. (p. 26)
Excessive high-pitched sound is heard.	• The picture has been recorded with WIND set to ON in the menu system. → When there is no wind, set it to OFF. (p. 25)
The date or time indicator disappears.	• Reset the date and time. (p. 47)

(to be continued)

Trouble check

Picture

Symptom	Cause and/or Corrective Action
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p. 12)
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	• The contrast between the subject and background is too high. The camcorder is not malfunctioning. → Change locations.
A vertical band appears when shooting a very bright subject.	• The camcorder is not malfunctioning.
The playback picture is not clear.	• EDIT is set to ON in the menu system. → Set it to OFF. (p. 26)
The picture is "noisy".	• The video heads may be dirty. → Clean the heads using the Sony V8-25CLH cleaning cassette (not supplied). (p. 53)
The picture does not appear in the viewfinder.	• If VF PW-SAVE is set to ON, the picture disappears automatically when you turn your face away from the viewfinder. → Bring your face close to the viewfinder within 1/2 inch (1 cm). Or set VF PW-SAVE to OFF. (p. 25)
The picture in the viewfinder does not disappear even if VF PW-SAVE is set to ON.	• Sunlight or an incandescent lamp may prevent the viewfinder sensor from working correctly. This is not a malfunction.
An unknown picture is displayed in the viewfinder.	• If 10 minutes elapse after you set the POWER switch to CAMERA without inserting a cassette, the camcorder automatically starts the demonstration or DEMO is set to ON in the menu system. → Insert the cassette and the demonstration stops. You can make the demonstration not appear. (p. 26)
The five digit code appears.	• The self-diagnosis function is activated. → Check the code and solve the problem. (p. 60)

Others

Symptom	Cause and/or Corrective Action
The supplied Remote Commander does not work.	• COMMANDER is set to OFF in the menu system. → Set it to ON. (p. 67) • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are not inserted with the correct polarity. → Insert the batteries with the correct polarity. (p. 67) • The batteries are dead. → Insert new ones. (p. 67)

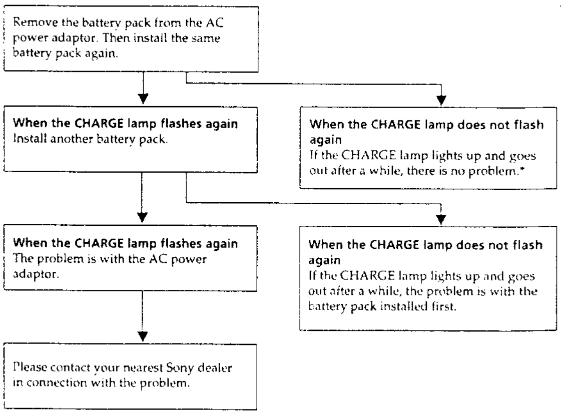
Trouble check

AC power adaptor

Symptom	Corrective Actions
The VTR/CAMERA or CHARGE lamp does not light.	• Disconnect the power cord. After about 1 minute, reconnect the power cord.
The CHARGE lamp flashes.	• See the following chart.

When the CHARGE lamp flashes

Check through the following chart.



Remove the battery pack from the AC power adaptor. Then install the same battery pack again.

When the CHARGE lamp flashes again
Install another battery pack.

When the CHARGE lamp does not flash again
If the CHARGE lamp lights up and goes out after a while, there is no problem.*

When the CHARGE lamp flashes again
The problem is with the AC power adaptor.

When the CHARGE lamp does not flash again
If the CHARGE lamp lights up and goes out after a while, the problem is with the battery pack installed first.

Please contact your nearest Sony dealer in connection with the problem.

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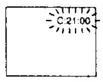
* If you use a battery pack which you have just bought or which has been left unused for a long time, the CHARGE lamp may flash at the first charging. This does not indicate a problem. Repeat again to charge with the same battery pack.

Trouble check

Self-diagnosis function

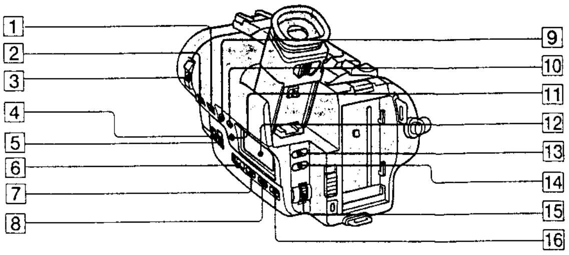
If the self-diagnosis function is activated to prevent the camcorder from operating abnormally, the five digit service number (combination of an alphabet and figures) flashes in the viewfinder or display window. In this case, check the following table.



First three digits	Cause and/or Corrective Action
C21	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 52)
C22	• The video heads are dirty. → Clean the heads using the Sony V8-25 CLH cleaning cassette (not supplied). (p. 53)
C23	• The camcorder does not operate when using a battery that is not an InfoLITHIUM battery. → Use an InfoLITHIUM battery. (p. 6)
C31	• To prevent the camcorder from operating abnormally, the self-diagnosis function has come on. → Remove the cassette and insert it again, and then operate the camcorder. (p. 10)
C32	• To prevent the camcorder from operating abnormally, the self-diagnosis function has come on. → Disconnect the power cord of the AC power adaptor or remove the battery pack. After reconnecting or reattaching the power source, operate the camcorder.
E61 E62	• To prevent the camcorder from operating abnormally, the self-diagnosis function has come on. → When you contact your local authorized Sony service facility, inform the service number with five digits. (example: E:61:10)

If a difficulty persists after checking the problem a few times, contact your local authorized Sony service facility.

Identifying the parts



1 **BACKLIGHT button** (p.35)

2 **FADER button** (p.27)

3 **POWER switch** (p.11)

4 **NEAR/FAR dial** (p.32)

5 **FOCUS switch** (p.32)

6 **STEADY SHOT switch** (p.45)

7 **PICTURE EFFECT button** (p.29)

8 **EXPOSURE button** (p.35)

9 **DATE button** (p.41)

10 **TIME button** (p.41)

11 **COUNTER RESET button** (p.13)

12 **Display window** (p.69)

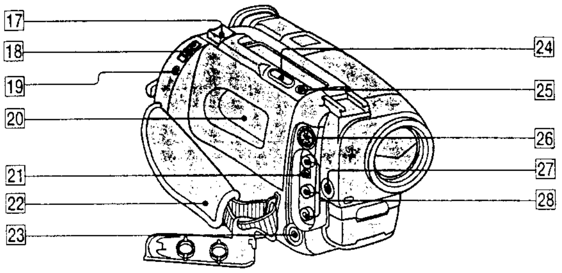
13 **TITLE button** (p.38)

14 **MENU button** (p.24)

15 **CONTROL dial** (p.24)

16 **PROGRAM AE button** (p.33)

Identifying the Parts



17 **Power zoom lever** (p.14)

18 **EJECT switch** (p.10)

19 **LANC ⅃ control jack**
⅃ stands for Local Application Control Bus System. The ⅃ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

20 **Cassette compartment** (p.10)

21 **RFU DC OUT (RFU adaptor DC output) jack** (p.18)

22 **Grip strap** (p.16)

23 **Ω (headphones) jack** (p.20)

24 **EDITSEARCH button** (p.17)

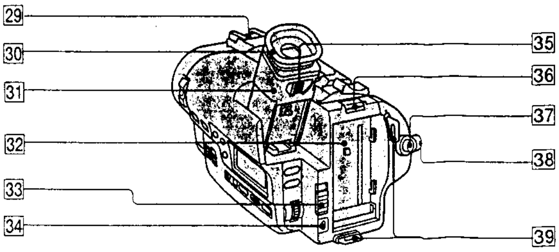
25 **LASER LINK button** (p.19)

26 **S VIDEO jack** (p.18, 44)

27 **MIC jack (PLUG IN POWER)**
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

28 **VIDEO/AUDIO jacks** (p.18, 44)

Identifying the Parts



29 **Intelligent accessory shoe**
The intelligent accessory shoe supplies power to optional accessories such as a video light.

30 **Eyecup** (p.16)

31 **Viewfinder** (p.12, 16)

32 **Battery mounting surface**

33 **START/STOP MODE switch** (p.15)

34 **16:9 WIDE button** (p.28)

35 **Viewfinder lens adjustment lever** (p.12)

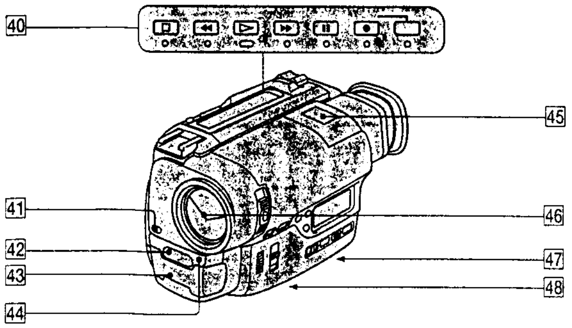
36 **BATT (battery) PUSH button** (p.8)

37 **START/STOP button** (p.11)

38 **STANDBY switch** (p.11)

39 **Hooks for shoulder strap** (p.68)

Note on the intelligent accessory shoe
Supplies power to optional accessories such as a video light or microphone. The intelligent accessory shoe is linked to the STANDBY switch, allowing you to turn on and off the power supplied by the shoe. Refer to the instruction manual of the accessory for further information. To connect an accessory, press down and push it to the end, and then tighten the screw. To remove an accessory, loosen the screw, and then press down and pull out the accessory.



40 **Video control buttons** (p.20)
- □ STOP (stop)
- ◀◀ REW (rewind)
- ▷ PLAY (playback)
- ▶▶ FF (fastforward)
- ❚❚ PAUSE (pause)
- ● REC (recording)

41 **Camera recording/battery lamp** (p.11)

42 **IR transmitter** (p.19)

43 **Microphone**

44 **Remote sensor** (p.68)
Aim the Remote Commander here for remote control.

45 **Lighting aperture** (p.12)

46 **Lens cover**

47 **Lithium battery compartment** (p.46)

48 **Tripod receptacle** (p.16)
Make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm) otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

To watch the demonstration

You can start the demonstration by setting DEMO MODE in the menu system.
You can also start the demonstration by the following operation.

To enter demo mode

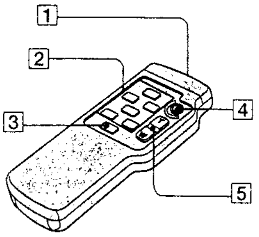
(1) Eject the cassette and set the POWER switch to VTR.
(2) Turn STANDBY up.
(3) While holding down ▷ set the POWER switch to CAMERA.

To exit demo mode

(1) Set the POWER switch to VTR.
(2) Turn STANDBY up.
(3) While holding down □ set the POWER switch to CAMERA.

Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.

2 **Tape transport buttons** (p.20)

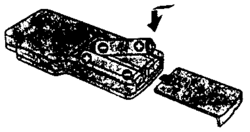
3 **DISPLAY button** (p.20)

4 **START/STOP button** (p.11)

5 **Power zoom button** (p.14)

To prepare the Remote Commander

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

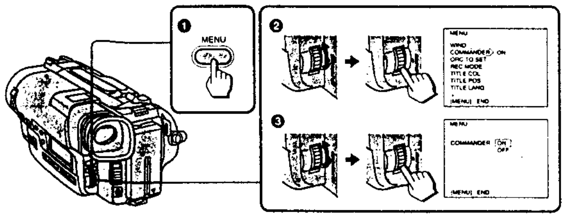


Note on battery life
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

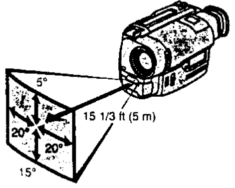
To avoid damage from possible battery leakage
Remove the batteries when you will not use the Remote Commander for a long time.

To use the Remote Commander

Make sure that the COMMANDER is set to ON in the menu system on the camcorder.



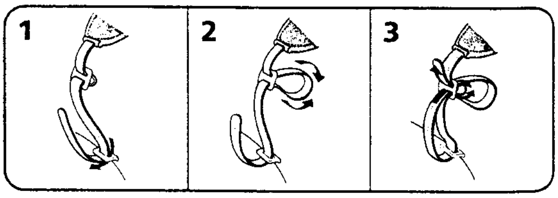
Remote control direction



Notes on the Remote Commander
- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
- This camcorder works in commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

Attaching the shoulder strap

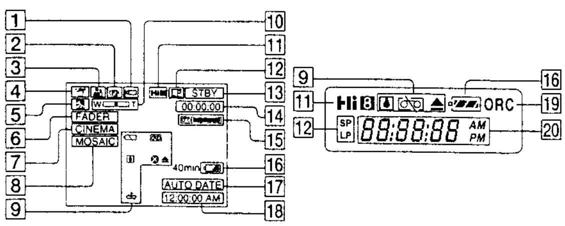
Attach the supplied shoulder strap to the hooks for the shoulder strap .



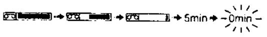
Operation indicators

Viewfinder

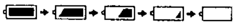
Display window


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
STBY
00:00:00
FADER
CINEMA
MOSAIC
40min
AUTO DATE
12:00:00 AM
9
11
12
16
19
20
Hi8
ORC
SP
LP
88:88:88
AM
PM

1. **WIND indicator** (p.25)
2. **Manual focusing** (p.32)
3. **PROGRAM AE indicator** (p.33)
4. **SteadyShot indicator** (p.45)
5. **Backlight indicator** (p.35)
6. **FADER indicator** (p.27)
7. **Wide mode indicator** (p.28)
8. **Picture effect indicator** (p.29)
9. **Warning indicators** (p.70)
10. **Exposure indicator/Zoom indicator** (p.14, 35)
11. **Playing back or recording in Hi8 format** (p.48)
12. **Recording mode indicator** (p.48)
13. **Video control mode** (p.20)
14. **Tape counter** (p.13)
    Self-diagnosis indicator (p.60)
15. **Remaining tape indicator**



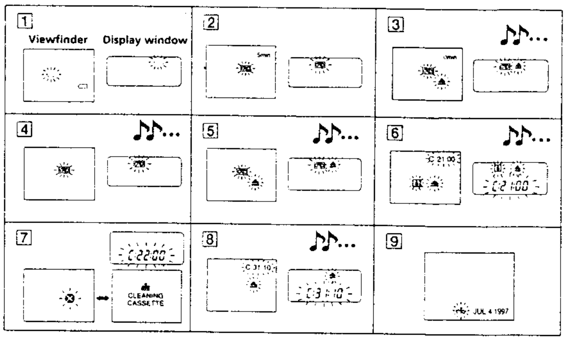
16. **Remaining battery indicator** (p.49)



17. **AUTO DATE indicator** (p.11)
18. **Date or Time indicator** (p.41)
19. **ORC indicator** (p.42)
20. **Date or Time indicator** (p.41)/
    Tape counter (p.13)/
    Self-diagnosis indicator (p.60)

Warning indicators

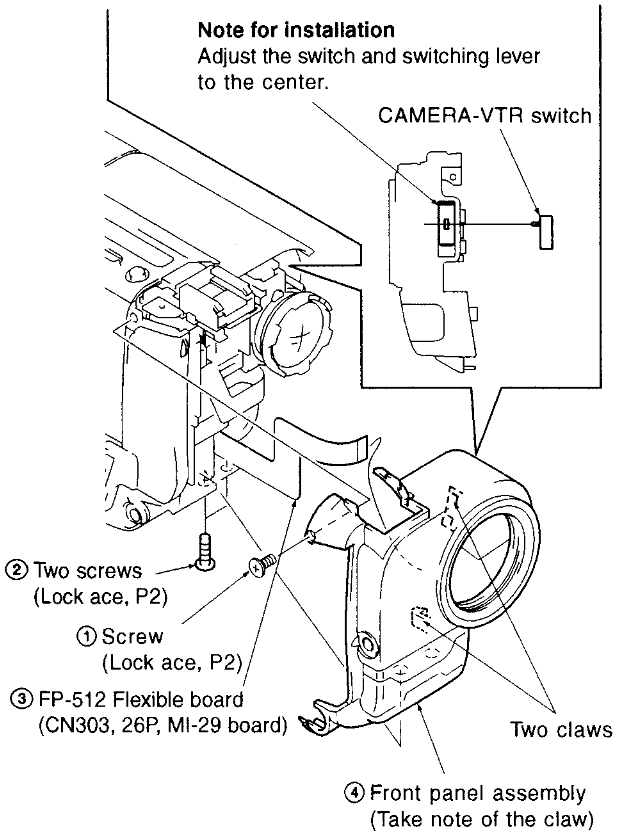
If indicators flash in the viewfinder or in the display window, check the following:
♪: you can hear the beep sound when the BEEP is set to ON.


1
Viewfinder
Display window
2
5min
3
0min
4
5
6
C:21:00
C:21:00
7
C:22:00
CLEANING CASSETTE
8
C:31:10
C:31:10
9
JUL 4 1997

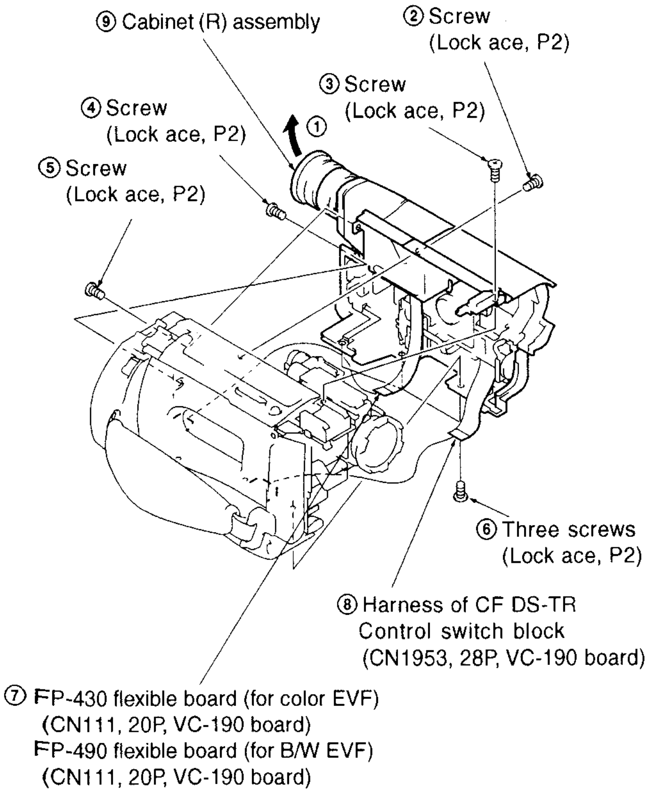
1. **The battery is weak or dead.**
   Slow flashing: The battery is weak.
   Fast flashing: The battery is dead.
2. **The tape is near the end.**
   The flashing is slow.
3. **The tape has run out.**
   The flashing becomes rapid.
4. **No tape has been inserted.**
5. **The tab on the tape is out (red).**
6. **Moisture condensation has occurred.** (p.52)
7. **The video heads may be contaminated.** (p.53)
8. **Some other trouble has occurred.**
   Use the self-diagnosis function (p.60).
   If the display does not disappear contact your Sony dealer or local authorized Sony service facility.
9. **The lithium battery is weak or is not installed.** (p.46)

SECTION 2
DISASSEMBLY

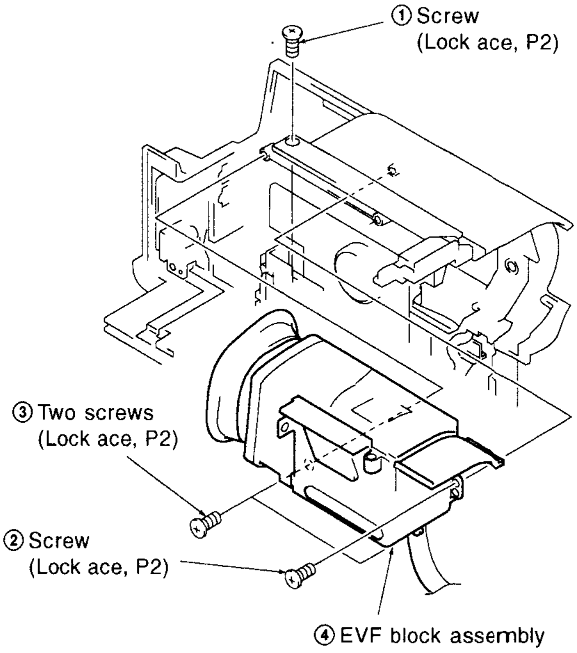
2-1. REMOVAL OF FRONT PANEL ASSEMBLY


Note for installation
Adjust the switch and switching lever to the center.
CAMERA-VTR switch
② Two screws (Lock ace, P2)
① Screw (Lock ace, P2)
③ FP-512 Flexible board (CN303, 26P, MI-29 board)
Two claws
④ Front panel assembly (Take note of the claw)

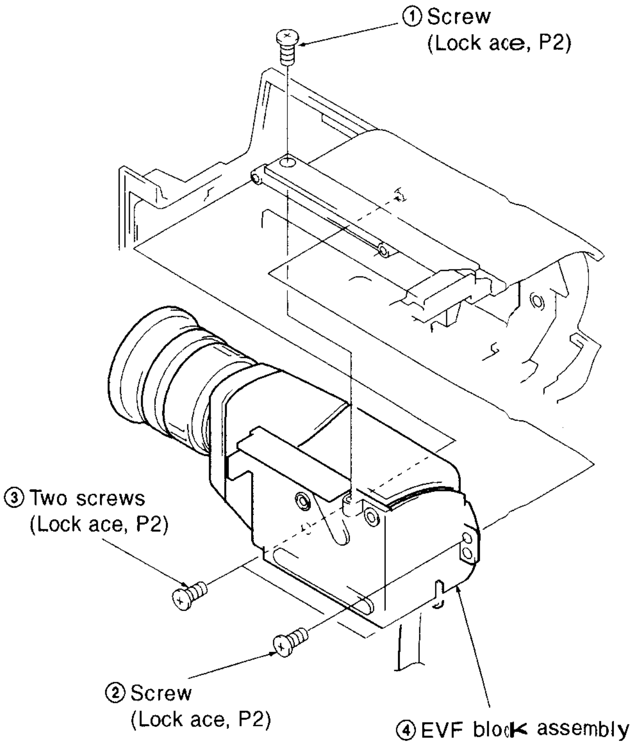
2-2. REMOVAL OF CABINET (R) ASSEMBLY


⑨ Cabinet (R) assembly
② Screw (Lock ace, P2)
③ Screw (Lock ace, P2)
④ Screw (Lock ace, P2)
①
⑤ Screw (Lock ace, P2)
⑥ Three screws (Lock ace, P2)
⑧ Harness of CF DS-TR Control switch block (CN1953, 28P, VC-190 board)
⑦ FP-430 flexible board (for color EVF) (CN111, 20P, VC-190 board)
FP-490 flexible board (for B/W EVF) (CN111, 20P, VC-190 board)

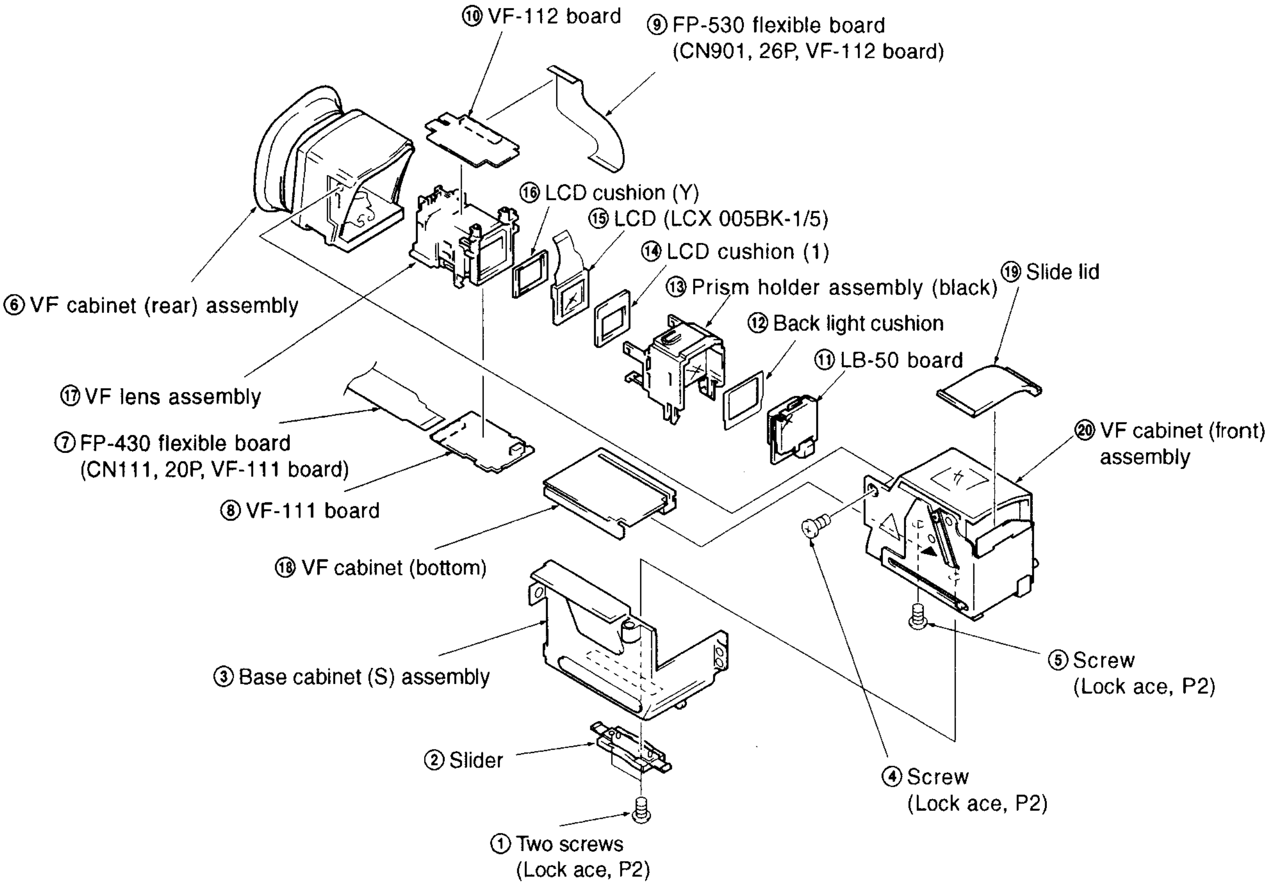
2-3. REMOVAL OF EVF BLOCK ASSEMBLY (1) (COLOR)


① Screw (Lock ace, P2)
③ Two screws (Lock ace, P2)
② Screw (Lock ace, P2)
④ EVF block assembly

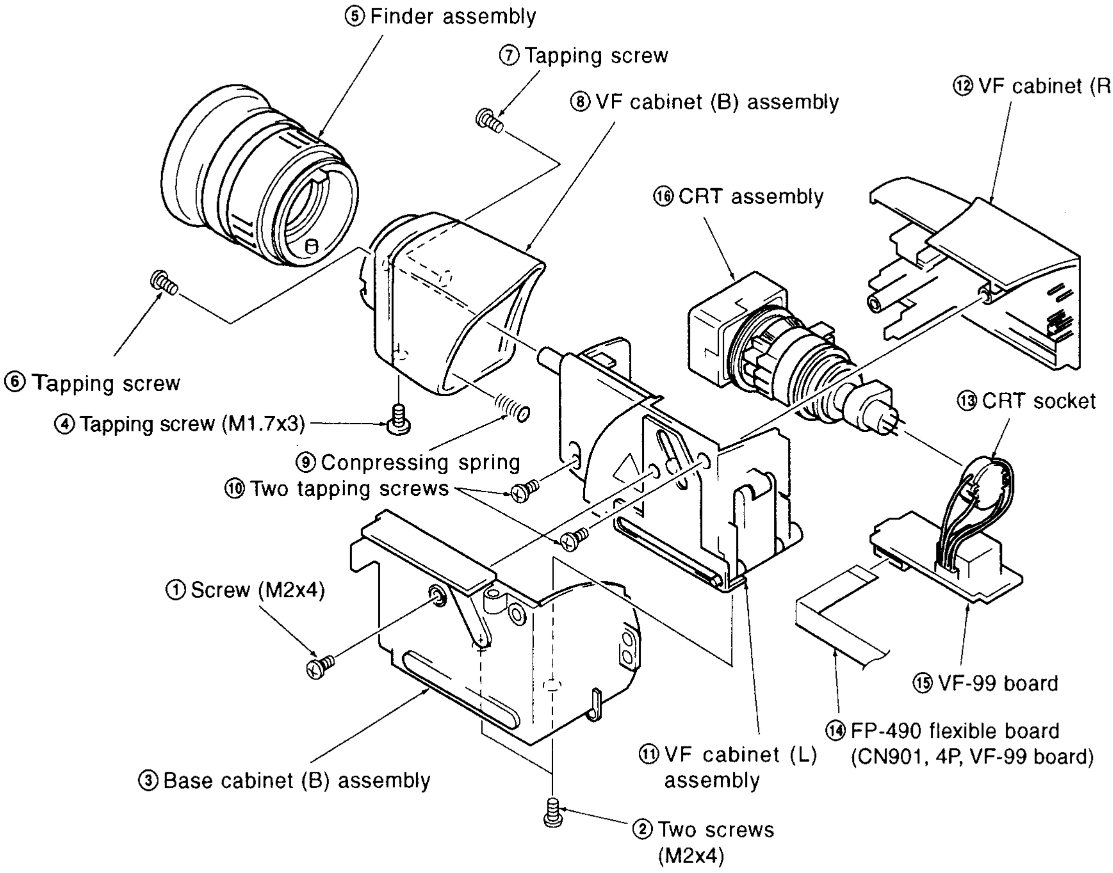
2-4. REMOVAL OF EVF BLOCK ASSEMBLY (1) (B/W)


① Screw (Lock ace, P2)
③ Two screws (Lock ace, P2)
② Screw (Lock ace, P2)
④ EVF block assembly

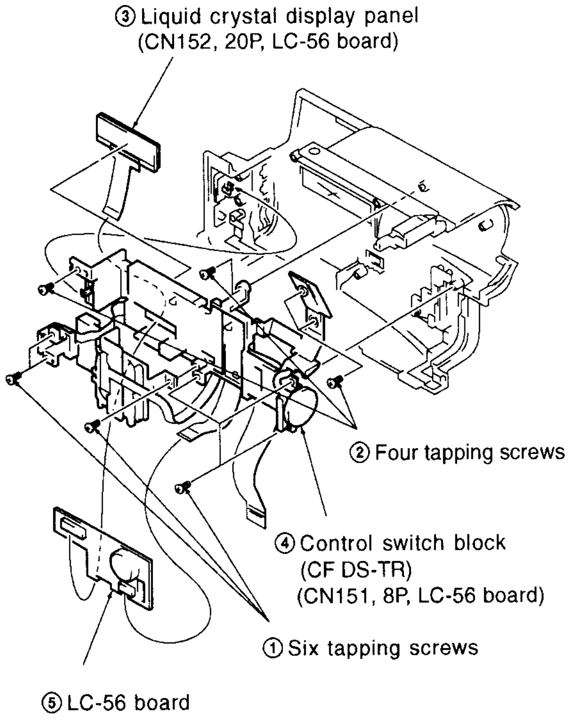
2-5. REMOVAL OF EVF BLOCK ASSEMBLY (2) (COLOR)


⑩ VF-112 board
⑨ FP-530 flexible board
(CN901, 26P, VF-112 board)
⑯ LCD cushion (Y)
⑮ LCD (LCX 005BK-1/5)
⑭ LCD cushion (1)
⑬ Prism holder assembly (black)
⑲ Slide lid
⑥ VF cabinet (rear) assembly
⑫ Back light cushion
⑪ LB-50 board
⑰ VF lens assembly
⑳ VF cabinet (front)
assembly
⑦ FP-430 flexible board
(CN111, 20P, VF-111 board)
⑧ VF-111 board
⑱ VF cabinet (bottom)
⑤ Screw
(Lock ace, P2)
③ Base cabinet (S) assembly
② Slider
④ Screw
(Lock ace, P2)
① Two screws
(Lock ace, P2)

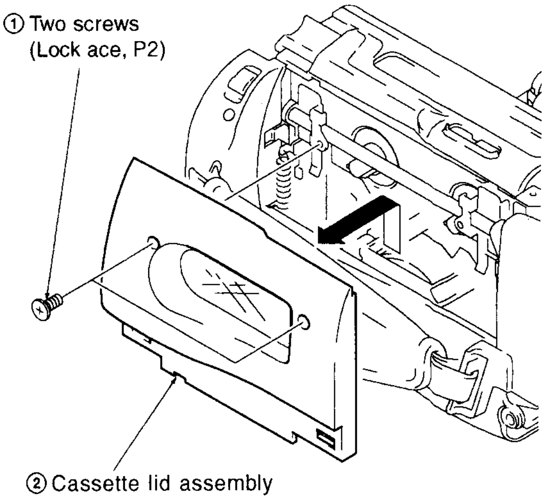
2-6. REMOVAL OF EVF BLOCK ASSEMBLY (2) (B/W)


⑤ Finder assembly
⑦ Tapping screw
⑧ VF cabinet (B) assembly
⑫ VF cabinet (R)
⑯ CRT assembly
⑥ Tapping screw
⑬ CRT socket
④ Tapping screw (M1.7x3)
⑨ Conpressing spring
⑩ Two tapping screws
① Screw (M2x4)
⑮ VF-99 board
⑭ FP-490 flexible board
⑪ VF cabinet (L)
assembly
(CN901, 4P, VF-99 board)
③ Base cabinet (B) assembly
② Two screws
(M2x4)

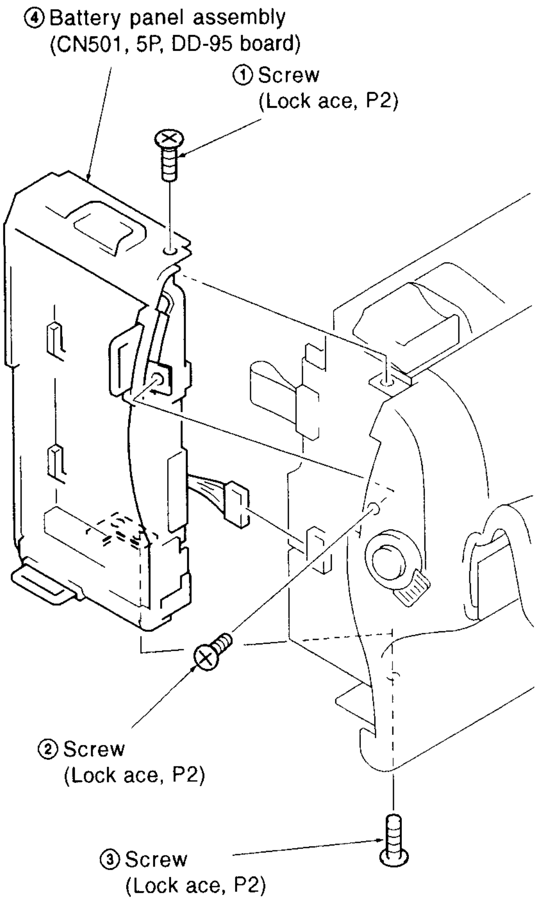
2-7. REMOVAL OF CONTROL SWITCH BLOCK (CF DS-TR)


③ Liquid crystal display panel
(CN152, 20P, LC-56 board)
② Four tapping screws
④ Control switch block
(CF DS-TR)
(CN151, 8P, LC-56 board)
① Six tapping screws
⑤ LC-56 board

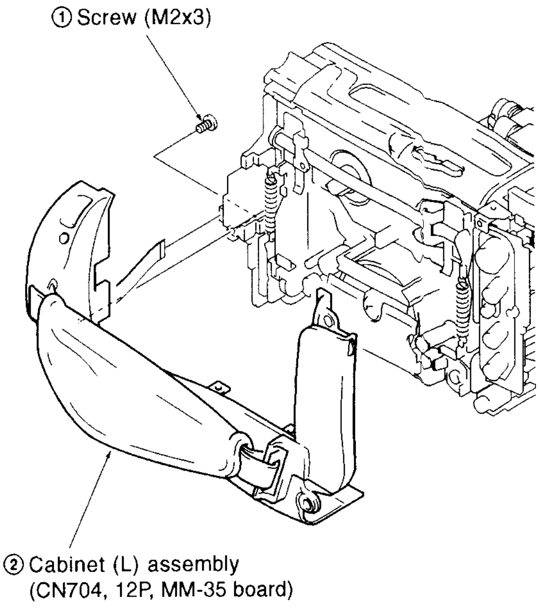
2-9. REMOVAL OF CASSETTE LID ASSEMBLY


① Two screws
(Lock ace, P2)
② Cassette lid assembly

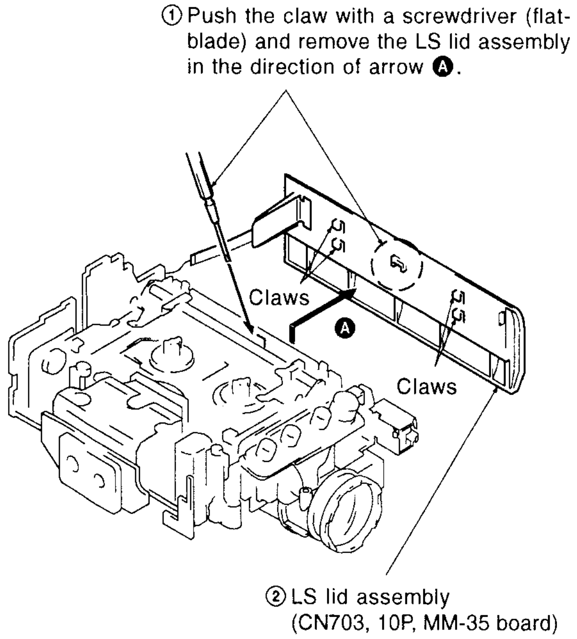
2-8. REMOVAL OF BATTERY PANEL ASSEMBLY


④ Battery panel assembly
(CN501, 5P, DD-95 board)
① Screw
(Lock ace, P2)
② Screw
(Lock ace, P2)
③ Screw
(Lock ace, P2)

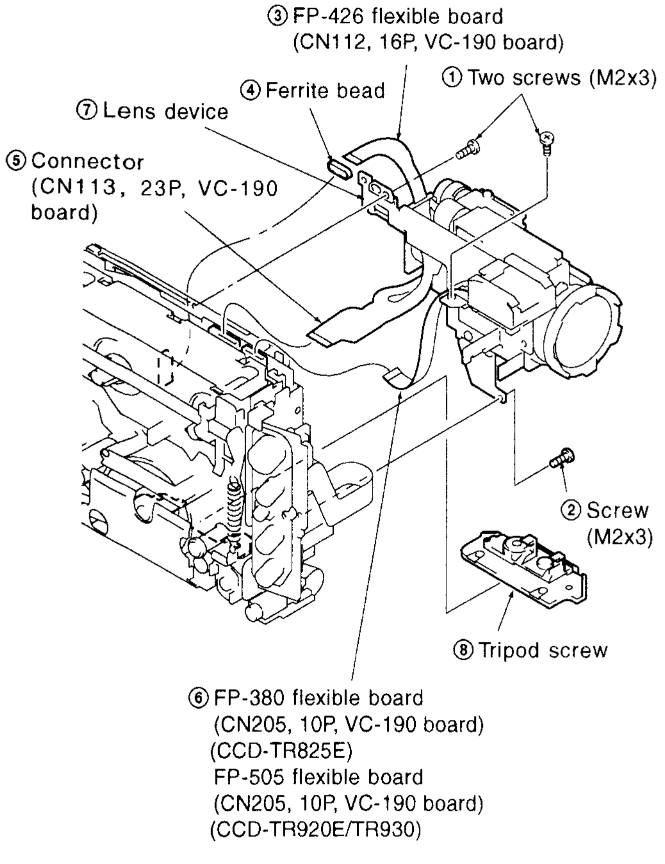
2-10. REMOVAL OF CABINET (L) ASSEMBLY


① Screw (M2x3)
② Cabinet (L) assembly
(CN704, 12P, MM-35 board)

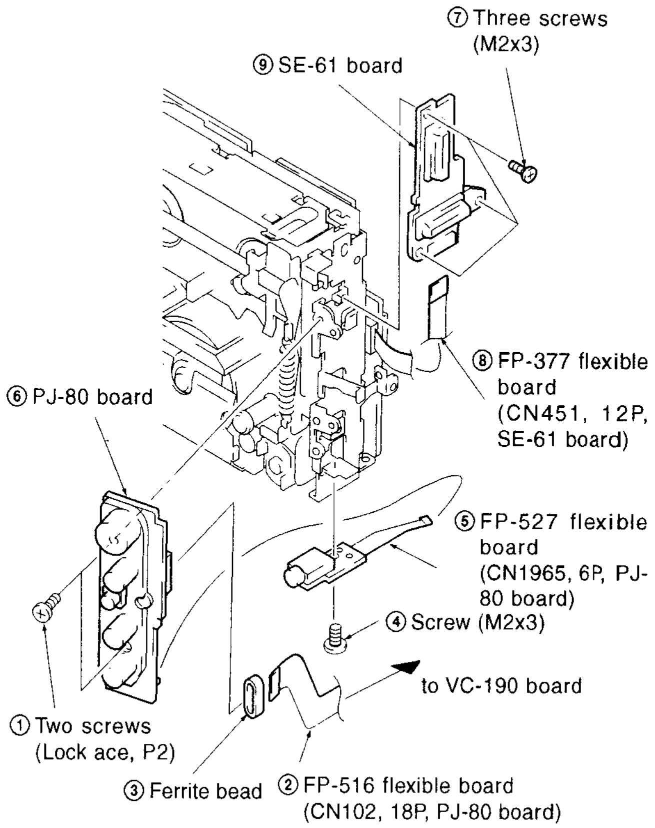
2-11. REMOVAL OF LS LID ASSEMBLY


① Push the claw with a screwdriver (flat-blade) and remove the LS lid assembly in the direction of arrow Ⓐ.
Claws
Ⓐ
Claws
② LS lid assembly (CN703, 10P, MM-35 board)

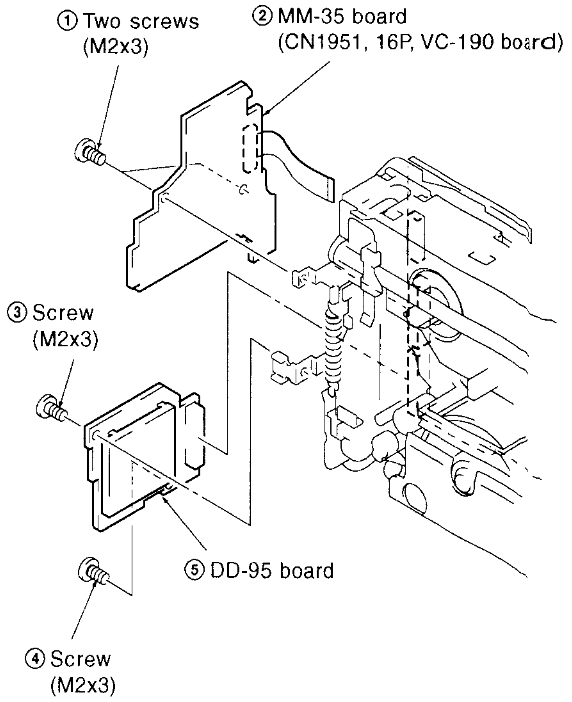
2-12. REMOVAL OF LENS DEVICE


③ FP-426 flexible board (CN112, 16P, VC-190 board)
④ Ferrite bead
① Two screws (M2x3)
⑦ Lens device
⑤ Connector (CN113, 23P, VC-190 board)
② Screw (M2x3)
⑧ Tripod screw
⑥ FP-380 flexible board (CN205, 10P, VC-190 board) (CCD-TR825E) FP-505 flexible board (CN205, 10P, VC-190 board) (CCD-TR920E/TR930)

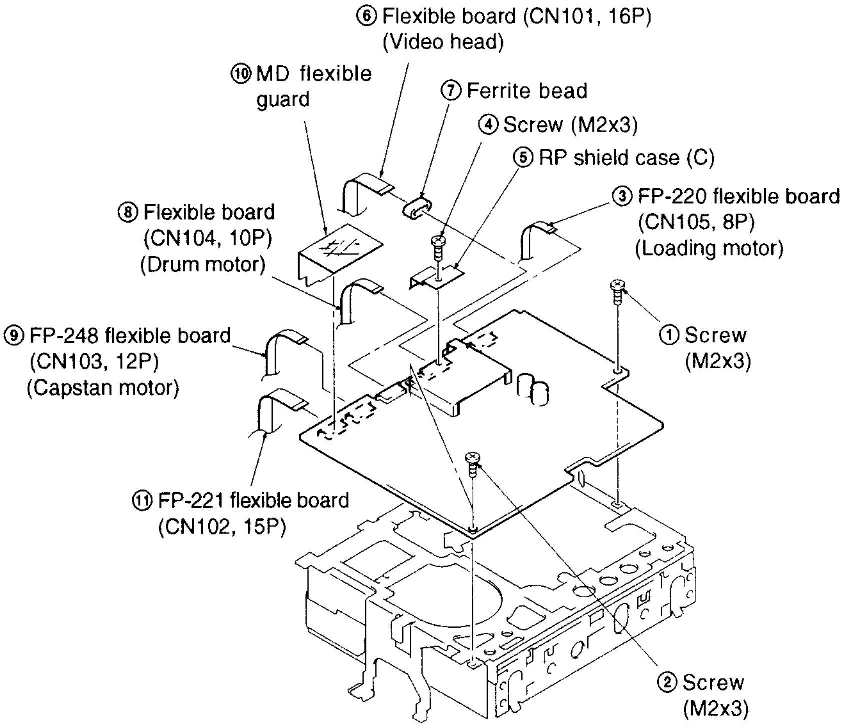
2-13. REMOVAL OF PJ-80 BOARD AND SE-61 BOARD


⑦ Three screws (M2x3)
⑨ SE-61 board
⑧ FP-377 flexible board (CN451, 12P, SE-61 board)
⑥ PJ-80 board
⑤ FP-527 flexible board (CN1965, 6P, PJ-80 board)
④ Screw (M2x3)
to VC-190 board
① Two screws (Lock ace, P2)
③ Ferrite bead
② FP-516 flexible board (CN102, 18P, PJ-80 board)

2-14. REMOVAL OF MM-35 BOARD AND DD-95 BOARD


① Two screws (M2x3)
② MM-35 board (CN1951, 16P, VC-190 board)
③ Screw (M2x3)
⑤ DD-95 board
④ Screw (M2x3)

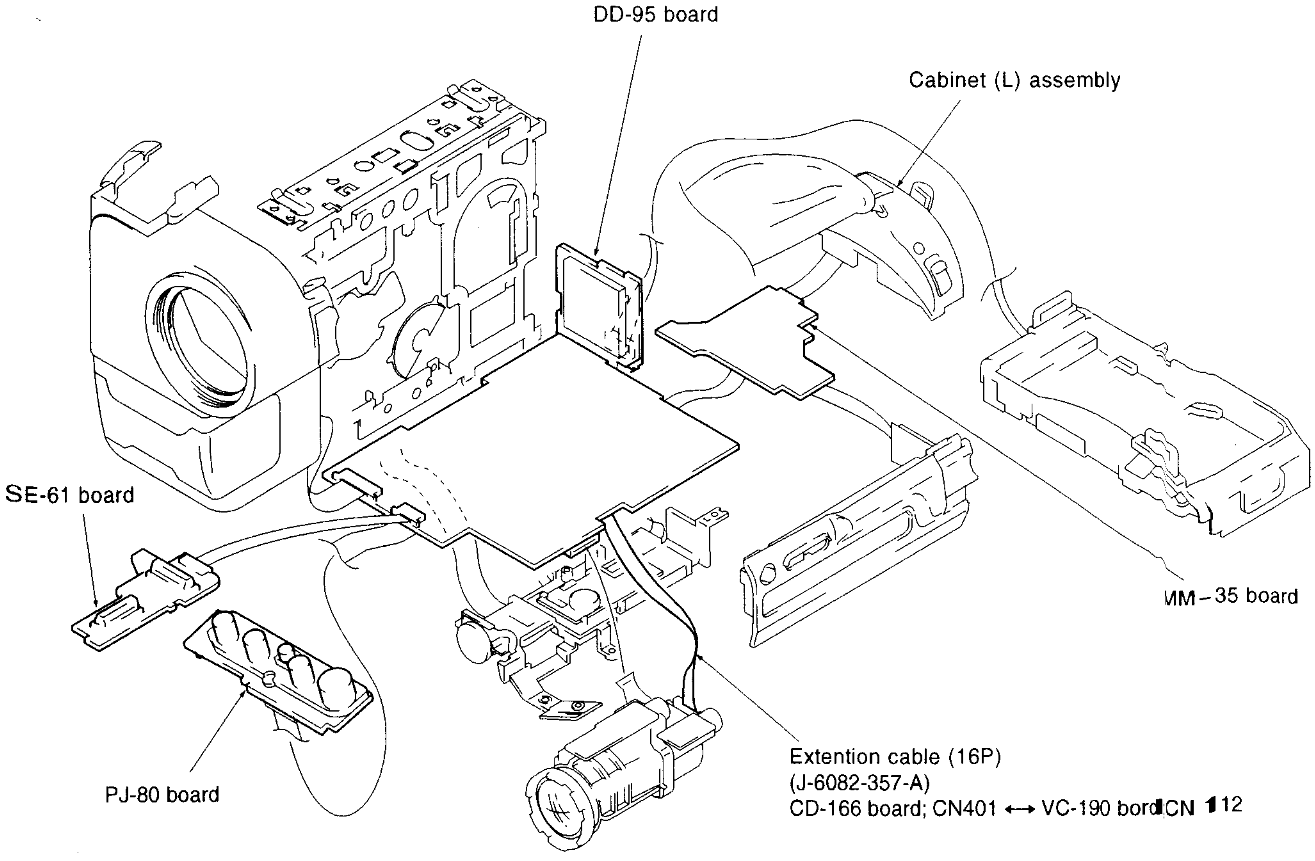
2-15. REMOVAL OF VC-190 BOARD


⑥ Flexible board (CN101, 16P)
(Video head)
⑩ MD flexible guard
⑦ Ferrite bead
④ Screw (M2x3)
⑤ RP shield case (C)
③ FP-220 flexible board
(CN105, 8P)
(Loading motor)
⑧ Flexible board
(CN104, 10P)
(Drum motor)
⑨ FP-248 flexible board
(CN103, 12P)
(Capstan motor)
① Screw
(M2x3)
⑪ FP-221 flexible board
(CN102, 15P)
② Screw
(M2x3)

2-16. SERVICE POSITION

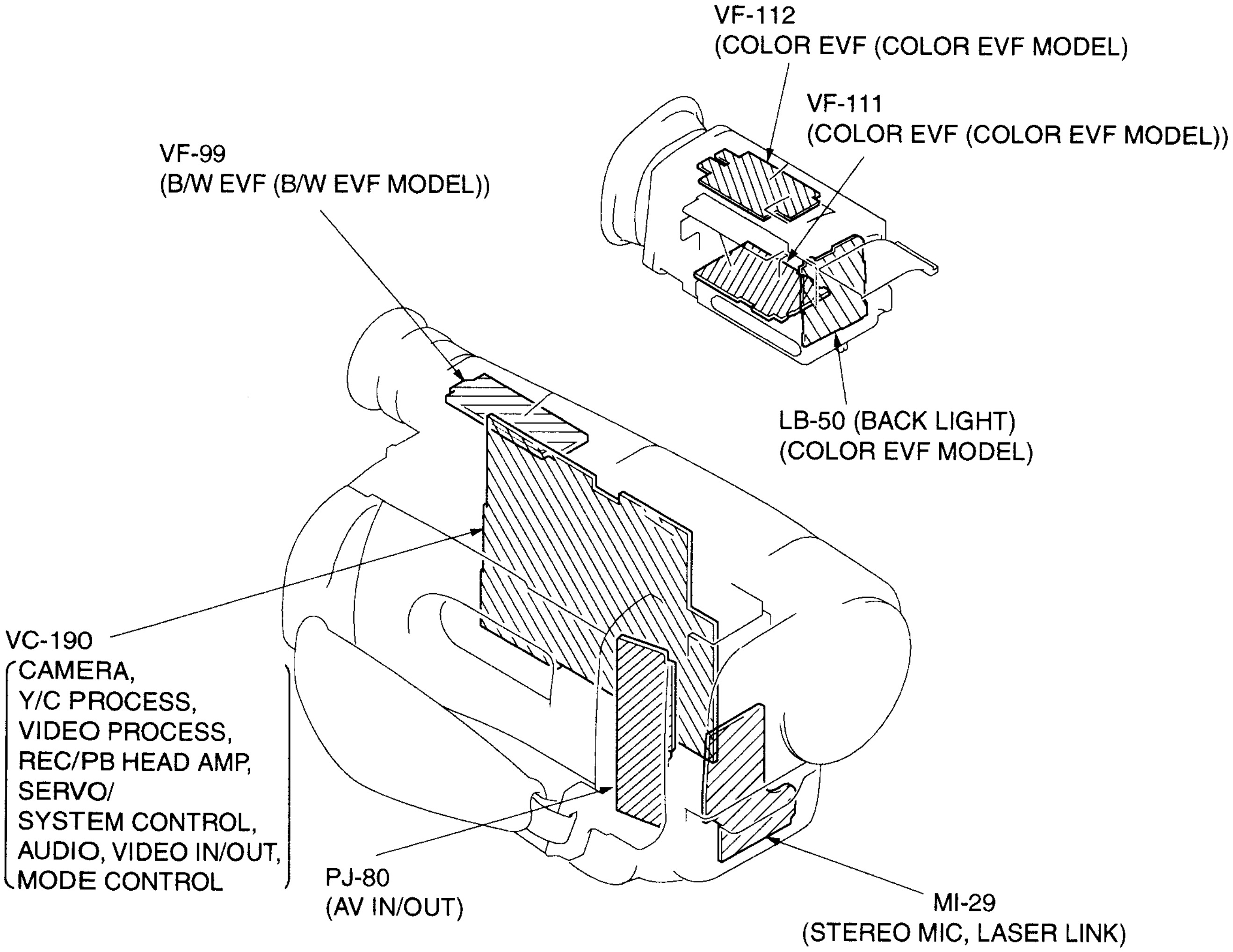
Note: When the following parts are removed, be sure to remember the connection parts because those connectors and etc. are needed to connect later on.

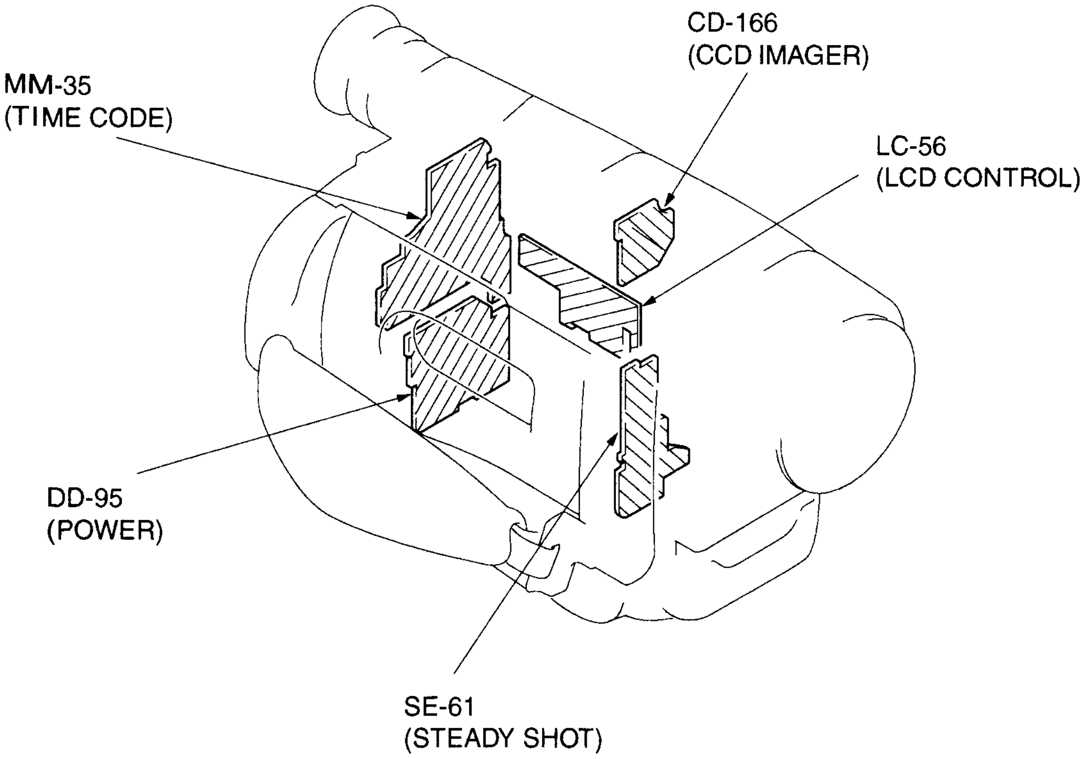
① Refer to 2-1. to remove the front panel assembly.
② Refer to 2-2. to remove the cabinet (R) assembly.
③ Refer to 2-8. to remove the battery panel assembly.
④ Refer to 2-10. to remove the cabinet (L) assembly.
⑤ Refer to 2-11. to remove the ls lid assembly.
⑥ Refer to 2-12. to remove the lens device.
⑦ Refer to 2-13. to remove the PJ-80 board and SE-61 board.
⑧ Refer to 2-15. to remove the VC-190 board.


DD-95 board
Cabinet (L) assembly
SE-61 board
MM-35 board
PJ-80 board

Extention cable (16P)
(J-6082-357-A)
CD-166 board; CN401 ↔ VC-190 bord CN 112

2-17. CIRCUIT BOARDS LOCATION

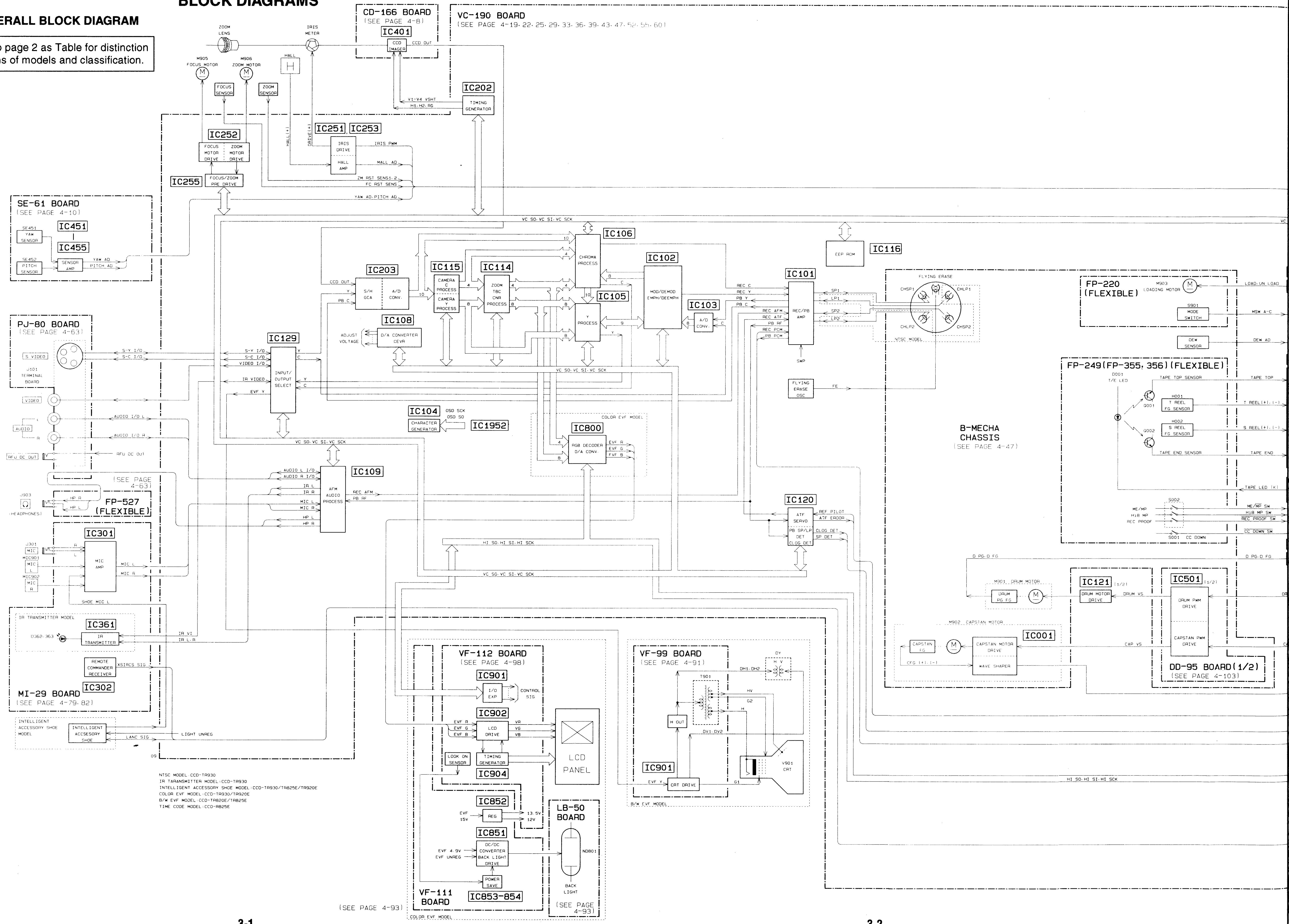

VF-112
(COLOR EVF (COLOR EVF MODEL)
VF-111
(COLOR EVF (COLOR EVF MODEL))
VF-99
(B/W EVF (B/W EVF MODEL))
LB-50 (BACK LIGHT)
(COLOR EVF MODEL)
VC-190
CAMERA,
Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/
SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)


CD-166
(CCD IMAGER)
MM-35
(TIME CODE)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

SECTION 3
BLOCK DIAGRAMS

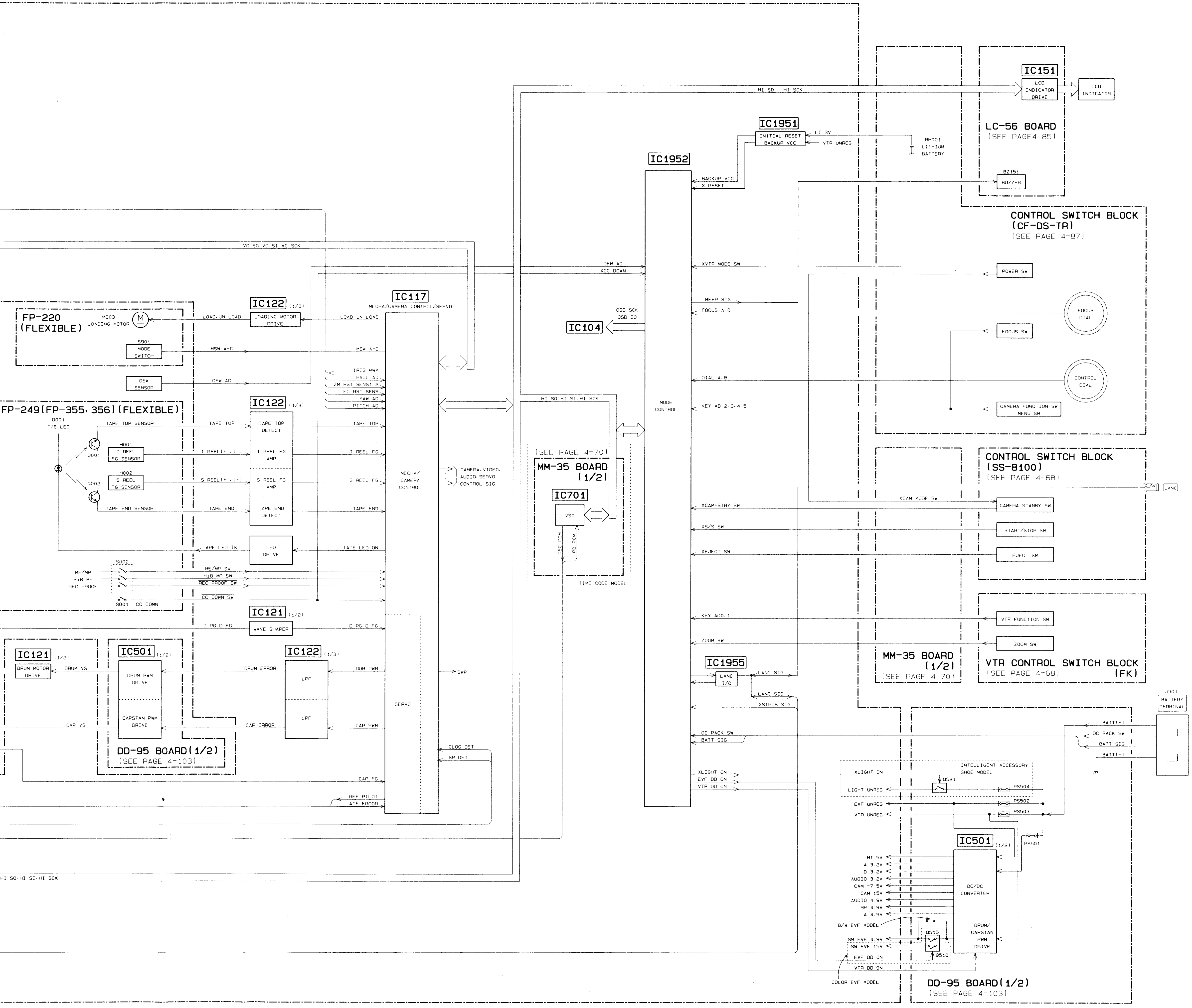
3-1. OVERALL BLOCK DIAGRAM

Refer to page 2 as Table for distinction functions of models and classification.

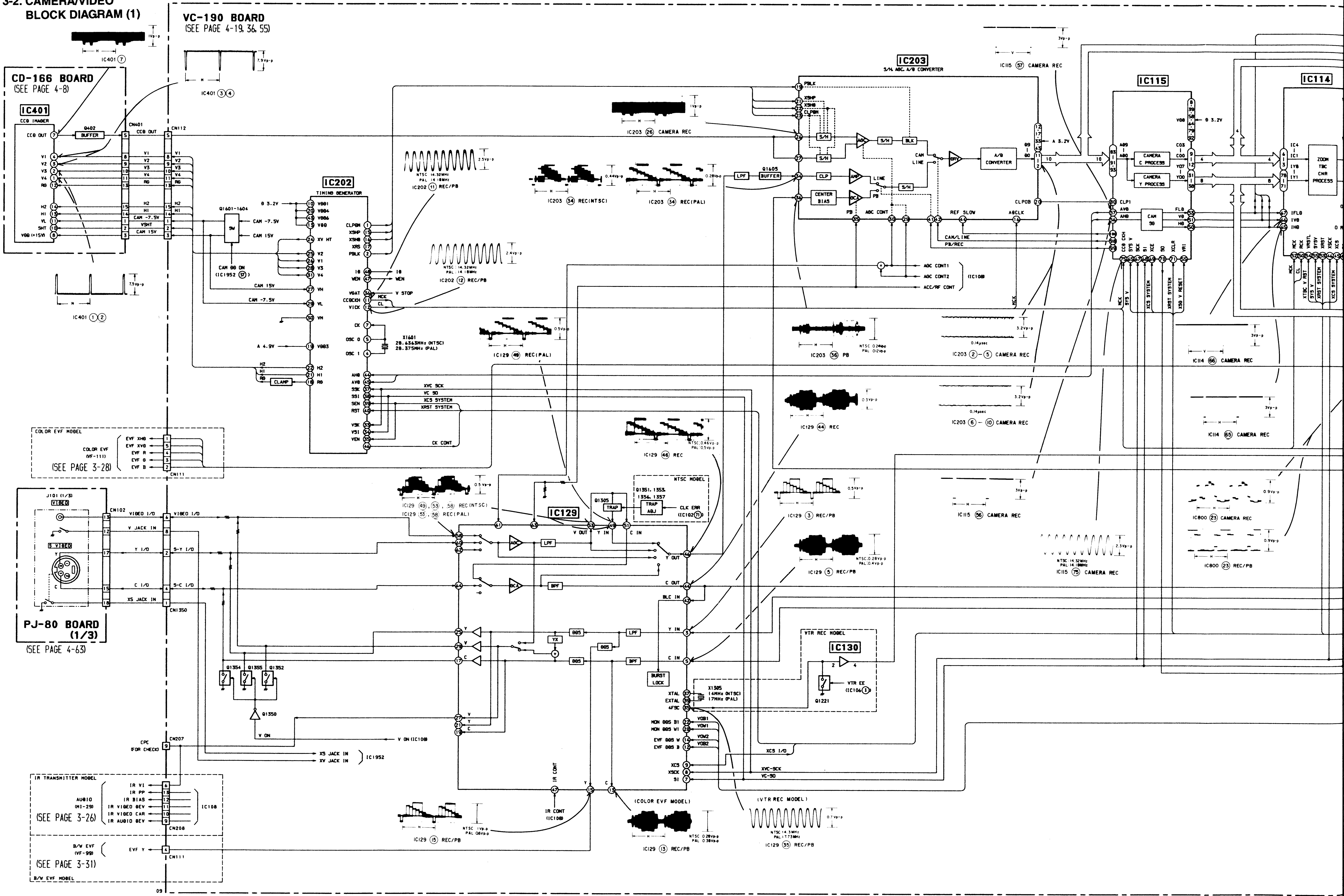


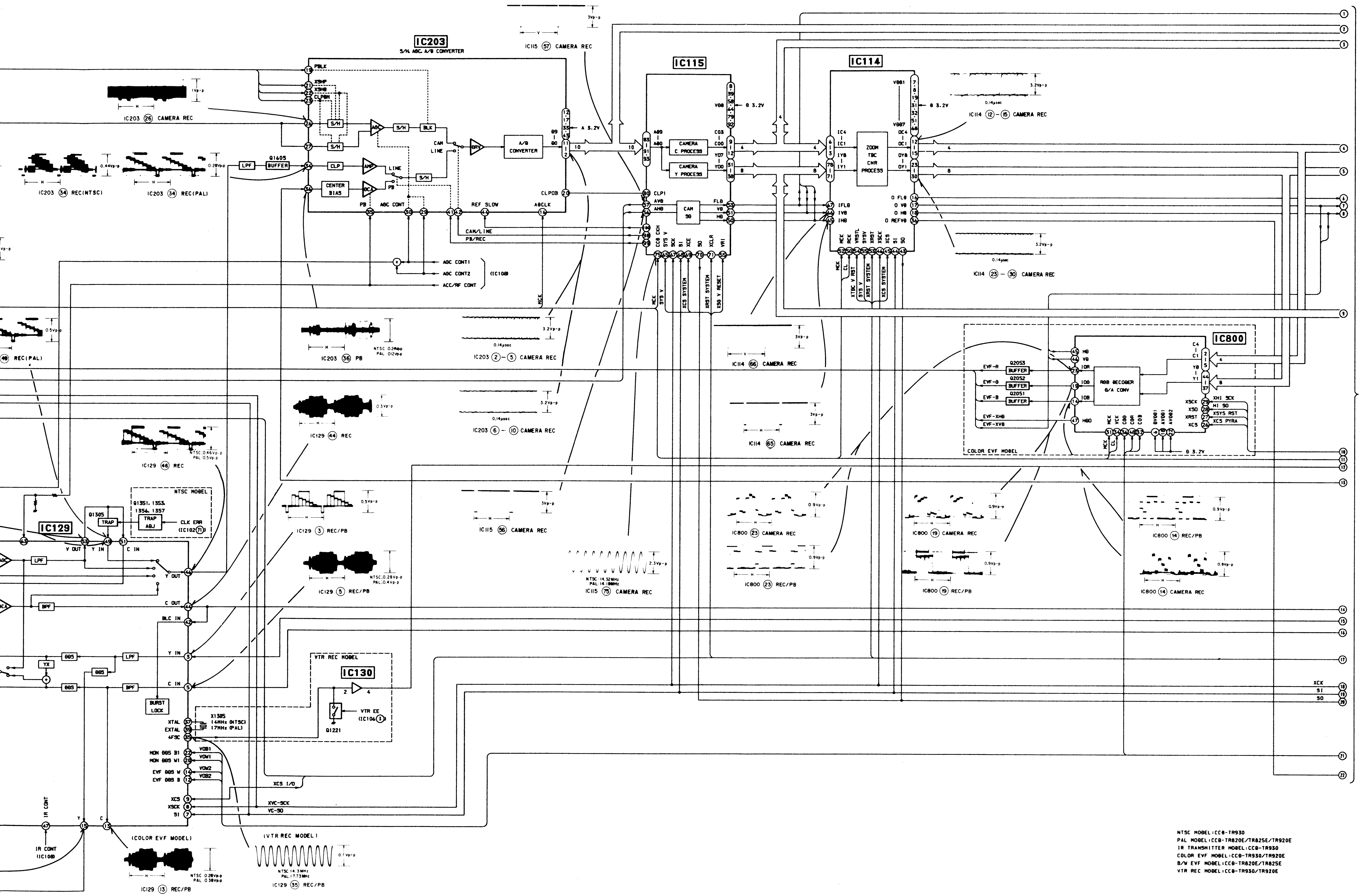
CD-166 BOARD
(SEE PAGE 4-8)
IC401
CCD IMAGER
CCD OUT
VC-190 BOARD
(SEE PAGE 4-19, 22, 25, 29, 33, 36, 39, 43, 47, 52, 56, 60)
ZOOM LENS
IRIS METER
HALL
M905 FOCUS MOTOR
M906 ZOOM MOTOR
FOCUS SENSOR
ZOOM SENSOR
IC202
TIMING GENERATOR
V1-V4 VSHT
H1, H2, RG
IC252
FOCUS MOTOR DRIVE
ZOOM MOTOR DRIVE
IC251
IC253
IRIS DRIVE
HALL AMP
HALL(+)
DRIVE(+)
IRIS PWM
HALL AD
IC255
FOCUS/ZOOM PRE DRIVE
ZM RST SENS1, 2
FC RST SENS
YAW AD, PITCH AD
SE-61 BOARD
(SEE PAGE 4-10)
IC451
IC455
SE451 YAW SENSOR
SE452 PITCH SENSOR
SENSOR AMP
YAW AD
PITCH AD
VC SO, VC SI, VC SCK
IC106
CHROMA PROCESS
IC116
EEP ROM
IC102
MOD/DEMOD EMPH/DEEMPH
IC101
REC/PB AMP
IC203
CCD OUT
S/H GCA
A/D CONV.
PB C
IC115
CAMERA C PROCESS
CAMERA Y PROCESS
IC114
ZOOM TBC CNR PROCESS
IC105
Y PROCESS
IC103
A/D CONV.
REC C
REC Y
PB Y
PB C
REC AFM
REC ATF
PB RF
REC PCM
PB PCM
SP1
LP1
SP2
LP2
SWP
FLYING ERASE
CHSP1
CHLP1
CHLP2
CHSP2
NTSC MODEL
FLYING ERASE OSC
FE
IC108
D/A CONVERTER CEVR
ADJUST VOLTAGE
IC129
INPUT/OUTPUT SELECT
S-Y I/O
S-C I/O
VIDEO I/O
IR VIDEO
EVF Y
PJ-80 BOARD
(SEE PAGE 4-63)
S VIDEO
J101 TERMINAL BOARD
VIDEO
AUDIO
L
R
AUDIO I/O L
AUDIO I/O R
RFU DC OUT
RFU DC OUT
IC104
CHARACTER GENERATOR
OSD SCK
OSD SO
IC1952
COLOR EVF MODEL
IC800
RGB DECODER D/A CONV
EVF R
EVF G
EVF B
IC109
AFM AUDIO PROCESS
AUDIO L I/O
AUDIO R I/O
IR L
IR R
MIC L
MIC R
HP L
HP R
REC AFM
PB RF
(SEE PAGE 4-63)
J903
(HEADPHONES)
FP-527 (FLEXIBLE)
IC301
MIC AMP
J301 MIC
MIC901 MIC L
MIC902 MIC R
SHOE MIC L
IR TRANSMITTER MODEL
IC361
IR TRANSMITTER
D362, 363
IR VI
IR L-R
REMOTE COMMANDER RECEIVER
XSIRCS SIG
IC302
MI-29 BOARD
(SEE PAGE 4-79, 82)
INTELLIGENT ACCESSORY SHOE MODEL
INTELLIGENT ACCSESORY SHOE
LANC SIG
LIGHT UNREG
09
HI SO, HI SI, HI SCK
IC120
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
CLOG DET
SP DET
VF-112 BOARD
(SEE PAGE 4-98)
IC901
I/O EXP
CONTROL SIG
IC902
LCD DRIVE
VR
VG
VB
LOOK ON SENSOR
TIMING GENERATOR
IC904
LCD PANEL
IC852
REG
EVF 15V
13.5V
12V
IC851
DC/DC CONVERTER BACK LIGHT DRIVE
EVF 4.9V
EVF UNREG
POWER SAVE
VF-111 BOARD
IC853-854
LB-50 BOARD
ND801
BACK LIGHT
(SEE PAGE 4-93)
(SEE PAGE 4-93)
COLOR EVF MODEL
VF-99 BOARD
(SEE PAGE 4-91)
T901
H OUT
DH1, DH2
DY
H
V
HV
G2
H
DV1, DV2
IC901
EVF Y
CRT DRIVE
G1
V901 CRT
B/W EVF MODEL
B-MECHA CHASSIS
(SEE PAGE 4-47)
FP-220 (FLEXIBLE)
M903 LOADING MOTOR
LOAD/UN LOAD
S901 MODE SWITCH
MSW A-C
DEW SENSOR
DEW AD
FP-249(FP-355, 356)(FLEXIBLE)
D001 T/E LED
TAPE TOP SENSOR
TAPE TOP
Q001
H001 T REEL FG SENSOR
T REEL(+), (-)
Q002
H002 S REEL FG SENSOR
S REEL(+), (-)
TAPE END SENSOR
TAPE END
TAPE LED (K)
S002
ME/MP
HI8 MP
REC PROOF
ME/MP SW
HI8 MP SW
REC PROOF SW
S001 CC DOWN
CC DOWN SW
D PG, D FG
M901 DRUM MOTOR
DRUM PG FG
IC121 (1/2)
DRUM MOTOR DRIVE
DRUM VS
IC501 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
M902 CAPSTAN MOTOR
CAPSTAN FG
CFG (+), (-)
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CAP VS
DD-95 BOARD(1/2)
(SEE PAGE 4-103)
HI SO, HI SI, HI SCK

NTSC MODEL CCD-TR930
IR TARANSMITTER MODEL:CCD-TR930
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E
COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
TIME CODE MODEL:CCD-R825E


HI SO · HI SCK
IC151
LCD INDICATOR DRIVE
LCD INDICATOR
LC-56 BOARD
(SEE PAGE4-85)
BZ151
BUZZER
IC1951
INITIAL RESET
BACKUP VCC
LI 3V
VTR UNREG
BH001
LITHIUM BATTERY
IC1952
BACKUP VCC
X RESET
CONTROL SWITCH BLOCK
(CF-DS-TR)
(SEE PAGE 4-87)
VC SO · VC SI · VC SCK
DEW AD
XCC DOWN
XVTR MODE SW
POWER SW
BEEP SIG
FOCUS A · B
FOCUS DIAL
FOCUS SW
OSD SCK
OSD SO
IC104
DIAL A · B
CONTROL DIAL
KEY AD 2 · 3 · 4 · 5
CAMERA FUNCTION SW
MENU SW
MODE CONTROL
IC117
MECHA/CAMERA CONTROL/SERVO
FP-220
(FLEXIBLE)
M903
LOADING MOTOR
M
IC122 (1/3)
LOADING MOTOR DRIVE
LOAD · UN LOAD
S901
MODE SWITCH
MSW A-C
DEW SENSOR
DEW AD
IRIS PWM
HALL AD
ZM RST SENS1 · 2
FC RST SENS
YAW AD
PITCH AD
HI SO · HI SI · HI SCK
FP-249(FP-355, 356)(FLEXIBLE)
D001
T/E LED
TAPE TOP SENSOR
TAPE TOP
TAPE TOP DETECT
H001
T REEL FG SENSOR
Q001
T REEL(+) · (-)
T REEL FG AMP
T REEL FG
H002
S REEL FG SENSOR
Q002
S REEL(+) · (-)
S REEL FG AMP
S REEL FG
TAPE END SENSOR
TAPE END
TAPE END DETECT
MECHA/ CAMERA CONTROL
CAMERA · VIDEO · AUDIO · SERVO CONTROL SIG
TAPE LED (K)
LED DRIVE
TAPE LED ON
S002
ME/MP
Hi8 MP
REC PROOF
ME/$\overline{\text{MP}}$ SW
Hi8 MP SW
$\overline{\text{REC PROOF SW}}$
$\overline{\text{CC DOWN SW}}$
S001 CC DOWN
IC121 (1/2)
WAVE SHAPER
D PG · D FG
IC121 (1/2)
DRUM MOTOR DRIVE
DRUM VS
IC501 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
CAP VS
DRUM ERROR
CAP ERROR
IC122 (1/3)
LPF
LPF
DRUM PWM
CAP PWM
SWP
SERVO
CLOG DET
SP DET
CAP FG
REF PILOT
ATF EROOR
DD-95 BOARD(1/2)
(SEE PAGE 4-103)
HI SO · HI SI · HI SCK
(SEE PAGE 4-70)
MM-35 BOARD (1/2)
IC701
VSC
REC PCM
PB PCM
TIME CODE MODEL
CONTROL SWITCH BLOCK
(SS-8100)
(SEE PAGE 4-68)
LANC
XCAM MODE SW
XCAM+STBY SW
CAMERA STANBY SW
XS/S SW
START/STOP SW
XEJECT SW
EJECT SW
KEY AD0 · 1
VTR FUNCTION SW
ZOOM SW
ZOOM SW
MM-35 BOARD (1/2)
(SEE PAGE 4-70)
VTR CONTROL SWITCH BLOCK
(SEE PAGE 4-68) (FK)
IC1955
LANC I/O
LANC SIG
LANC SIG
XSIRCS SIG
J901
BATTERY TERMINAL
BATT(+)
DC PACK SW
BATT SIG
BATT(-)
DC PACK SW
BATT SIG
XLIGHT ON
EVF DD ON
VTR DD ON
INTELLIGENT ACCESSORY SHOE MODEL
XLIGHT ON
Q521
LIGHT UNREG
PS504
EVF UNREG
PS502
VTR UNREG
PS503
PS501
IC501 (1/2)
MT 5V
A 3.2V
D 3.2V
AUDIO 3.2V
CAM -7.5V
CAM 15V
AUDIO 4.9V
RP 4.9V
A 4.9V
DC/DC CONVERTER
B/W EVF MODEL
Q515
SW EVF 4.9V
SW EVF 15V
Q518
DRUM/ CAPSTAN PWM DRIVE
EVF DD ON
VTR DD ON
COLOR EVF MODEL
DD-95 BOARD(1/2)
(SEE PAGE 4-103)

3-2. CAMERA/VIDEO BLOCK DIAGRAM (1)

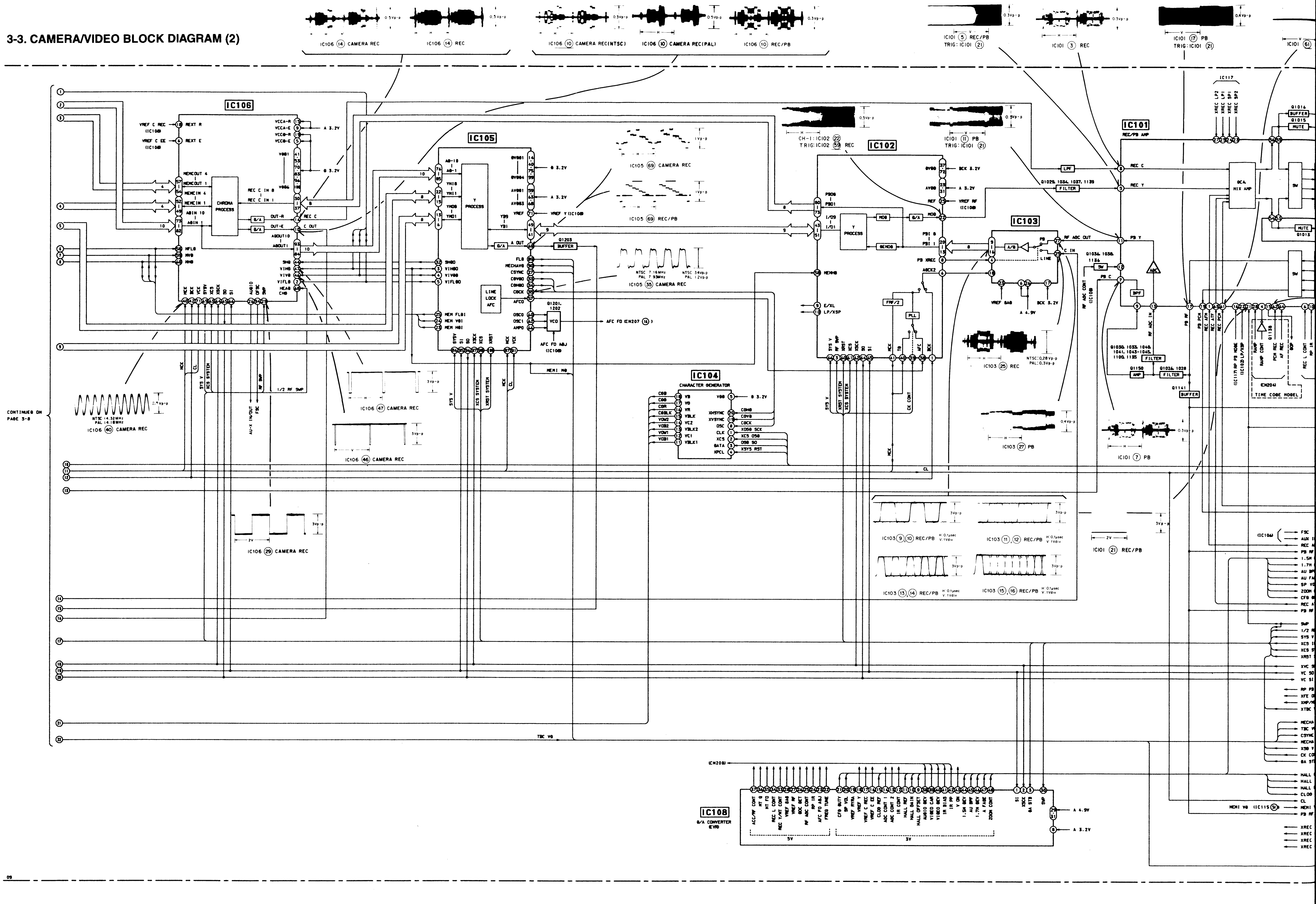

VC-190 BOARD
(SEE PAGE 4-19, 36, 55)
CD-166 BOARD
(SEE PAGE 4-8)
IC401
CCD IMAGER
Q402 BUFFER
CN401
CN112
IC401 ⑦
IC401 ③④
IC401 ①②
IC202
TIMING GENERATOR
Q1601-1604
SW
CAM -7.5V
CAM 15V
CAM DD ON (IC1952 (57))
X1601
28.6363MHz (NTSC)
28.375MHz (PAL)
CLAMP
IC202 ⑪ REC/PB
IC202 ⑫ REC/PB
IC203
S/H, AGC, A/D CONVERTER
IC203 (26) CAMERA REC
IC203 (34) REC(NTSC)
IC203 (34) REC(PAL)
Q1605 BUFFER
LPF
S/H
AGC
BLK
CLP
AMP
CENTER BIAS
GCA
A/D CONVERTER
AGC CONT1
AGC CONT2
AGC/RF CONT
(IC108)
IC203 (36) PB
IC203 ②-⑤ CAMERA REC
IC203 ⑥-⑩ CAMERA REC
IC115
CAMERA C PROCESS
CAMERA Y PROCESS
CAM SG
IC115 (57) CAMERA REC
IC115 (56) CAMERA REC
IC115 (75) CAMERA REC
IC114
ZOOM TBC CNR PROCESS
IC114 (66) CAMERA REC
IC114 (65) CAMERA REC
IC800 (23) CAMERA REC
IC800 (23) REC/PB
COLOR EVF MODEL
COLOR EVF (VF-111)
(SEE PAGE 3-28)
CN111
PJ-80 BOARD (1/3)
(SEE PAGE 4-63)
J101 (1/3) VIDEO
S VIDEO
CN102
CN1350
IC129
IC129 (49) REC(PAL)
IC129 (44) REC
IC129 (46) REC
IC129 (49),(53),(58) REC(NTSC)
IC129 (53),(58) REC(PAL)
IC129 ③ REC/PB
IC129 ⑤ REC/PB
IC129 (15) REC/PB
IC129 (13) REC/PB
IC129 (35) REC/PB
NTSC MODEL
Q1351, 1353, 1356, 1357
TRAP ADJ
Q1305 TRAP
CLK ERR (IC102 (71))
YX
DDS
BPF
BURST LOCK
X1305
14MHz (NTSC)
17MHz (PAL)
VTR REC MODEL
IC130
Q1221
VTR EE (IC106 ③)
Q1354 Q1355 Q1352
Q1350
V ON (IC108)
XS JACK IN
XV JACK IN
IC1952
CPC (FOR CHECK)
CN207
IR TRANSMITTER MODEL
AUDIO (MI-29)
(SEE PAGE 3-26)
IC108
CN208
B/W EVF (VF-99)
(SEE PAGE 3-31)
B/W EVF MODEL
(COLOR EVF MODEL)
(VTR REC MODEL)
IR CONT (IC108)
XCS I/O
XVC-SCK
VC-SO

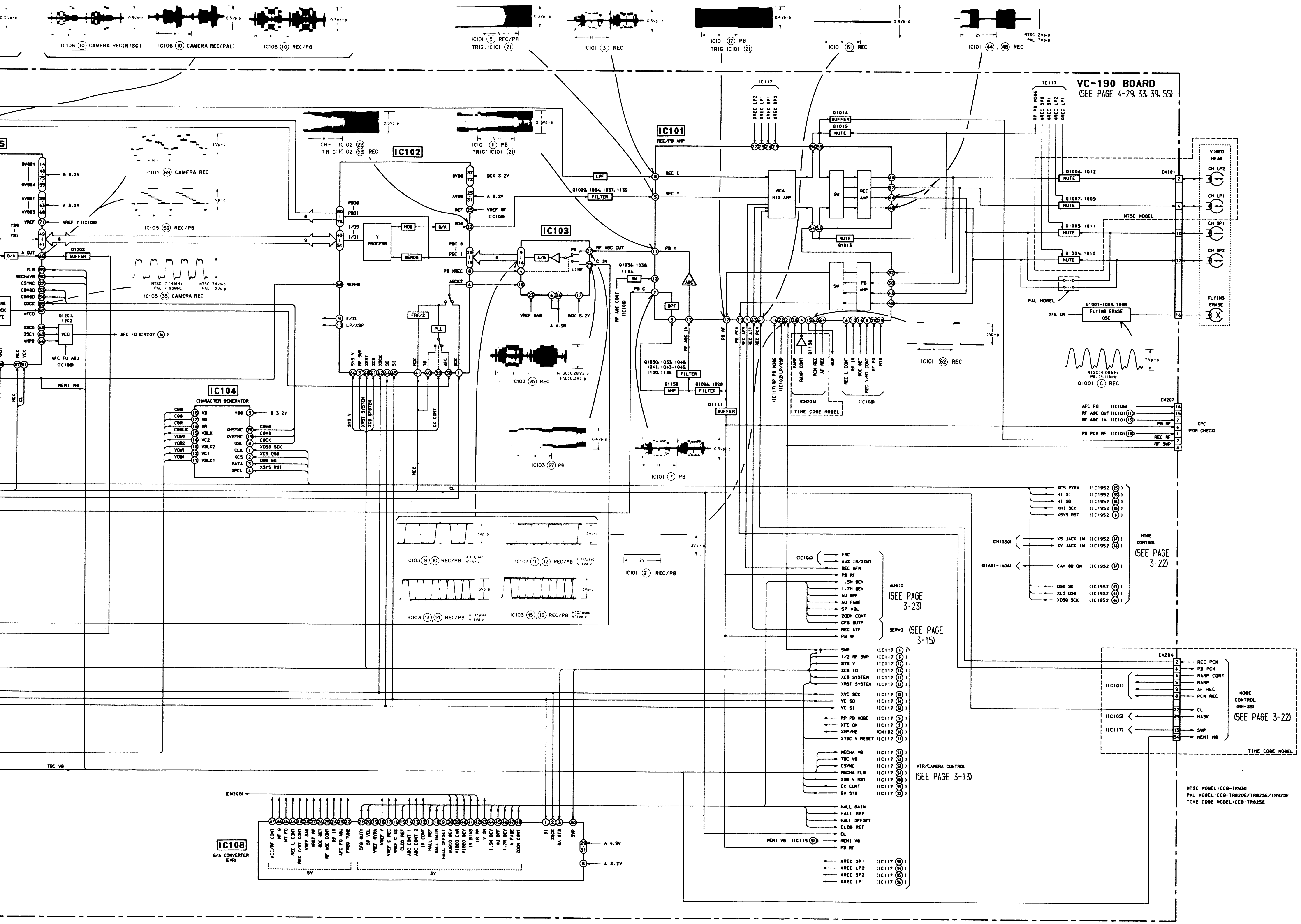

IC203
S/H, AGC, A/D CONVERTER
PBLK
XSHP
XSHD
CLPDM
S/H
AGC
BLK
CLP
AMP
LINE
CENTER BIAS
GCA
PB
AGC CONT
REF SLOW
ABCLK
CLPOB
CAM
LINE
GRY
A/D CONVERTER
A 3.2V
Q1605 BUFFER
LPF
AGC CONT1
AGC CONT2
ACC/RF CONT
(IC108)
CAM/LINE
PB/REC
MCK
IC203 (26) CAMERA REC
IC203 (34) REC(NTSC)
IC203 (34) REC(PAL)
IC203 (36) PB
IC203 (2)-(5) CAMERA REC
IC203 (6)-(10) CAMERA REC
IC115 (57) CAMERA REC
IC115
CAMERA C PROCESS
CAMERA Y PROCESS
CAM SG
CLP1
AVD
AHD
FLD
VD
HD
VDD
D 3.2V
CCD CKH
SYS V
SCK
SI
XCE
SO
XCLR
VR1
SYS V
XCS SYSTEM
XRST SYSTEM
XSO V RESET
IC115 (56) CAMERA REC
IC115 (75) CAMERA REC
NTSC 14.32MHz
PAL 14.188MHz
IC114
ZOOM TBC CNR PROCESS
IFLD
IVD
IHD
O FLD
O VD
O HD
O REFVD
XTBC V RST
SYS V
XRST SYSTEM
XCS SYSTEM
IC114 (12)-(15) CAMERA REC
IC114 (23)-(30) CAMERA REC
IC114 (66) CAMERA REC
IC114 (65) CAMERA REC
0.14μsec
IC800
RGB DECODER D/A CONV
EVF-R
EVF-G
EVF-B
Q2053 BUFFER
Q2052 BUFFER
Q2051 BUFFER
EVF-XHD
EVF-XVD
XSCK
XSO
XRST
XCS
XHI SCK
HI SO
XSYS RST
XCS PYRA
COLOR EVF MODEL
IC800 (23) CAMERA REC
IC800 (23) REC/PB
IC800 (19) CAMERA REC
IC800 (19) REC/PB
IC800 (14) REC/PB
IC800 (14) CAMERA REC
IC129
NTSC MODEL
Q1351, 1353, 1354, 1357
TRAP ADJ
Q1305 TRAP
CLK ERR (IC102 (71))
V OUT
Y IN
C IN
Y OUT
C OUT
BLC IN
BPF
LPF
DDS
YX
BURST LOCK
XTAL
EXTAL
4FSC
X1305 14MHz (NTSC) 17MHz (PAL)
MON DDS B1
MON DDS W1
EVF DDS W
EVF DDS B
VDB1
VDW1
VDW2
VDB2
XCS I/O
XCS
XSCK
SI
XVC-SCK
VC-SO
IR CONT
IR CONT (IC108)
(COLOR EVF MODEL)
(VTR REC MODEL)
VTR REC MODEL
IC130
VTR EE (IC106 (3))
Q1221
IC129 (44) REC
IC129 (46) REC
IC129 (3) REC/PB
IC129 (5) REC/PB
IC129 (13) REC/PB
IC129 (35) REC/PB
NTSC 14.3MHz PAL 17.73MHz
XCK
SI
SO

CONTINUED ON PAGE 3-9

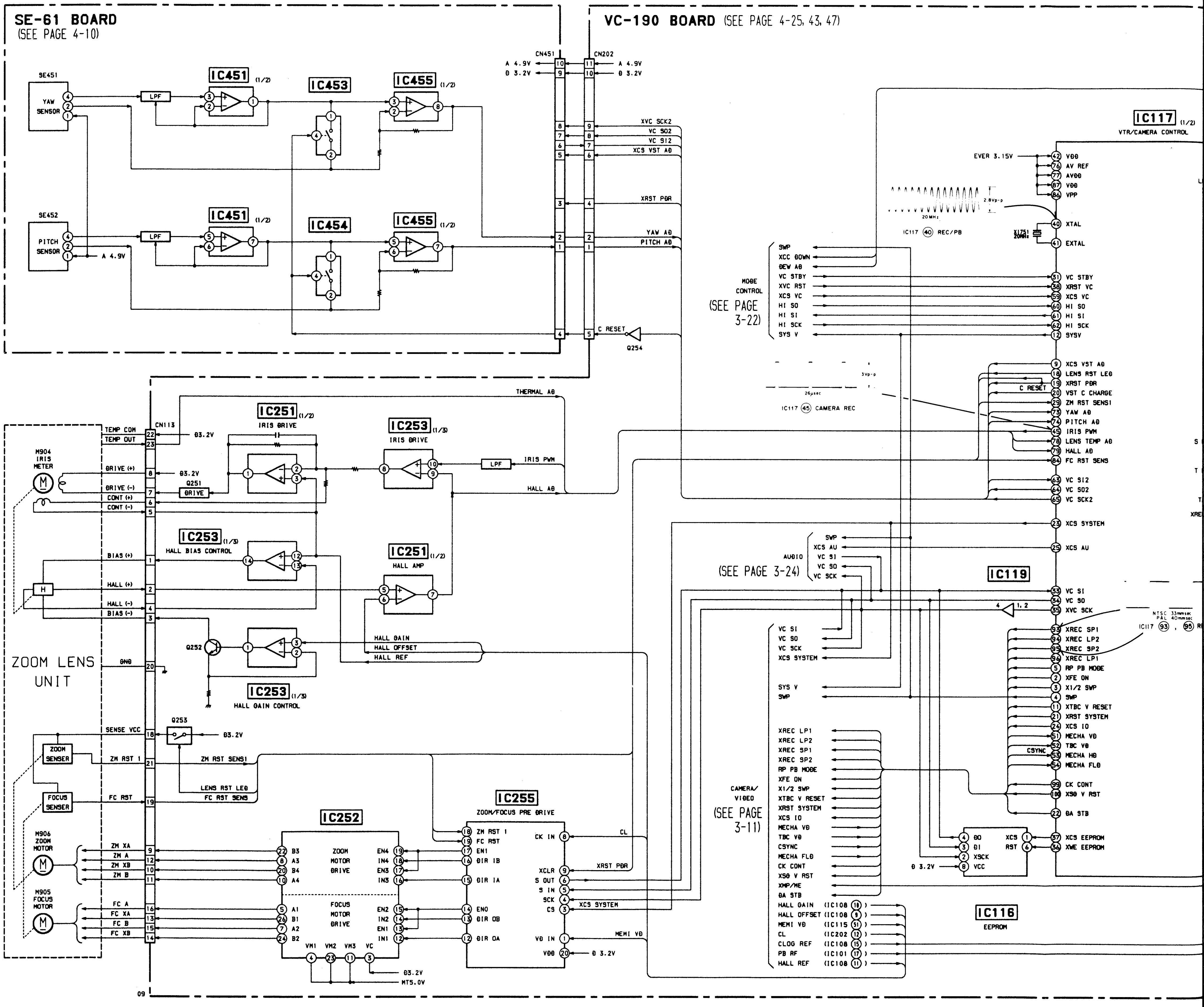
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR820E/TR825E/TR920E
IR TRANSMITTER MODEL:CCD-TR930
COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
VTR REC MODEL:CCD-TR930/TR920E

3-3. CAMERA/VIDEO BLOCK DIAGRAM (2)

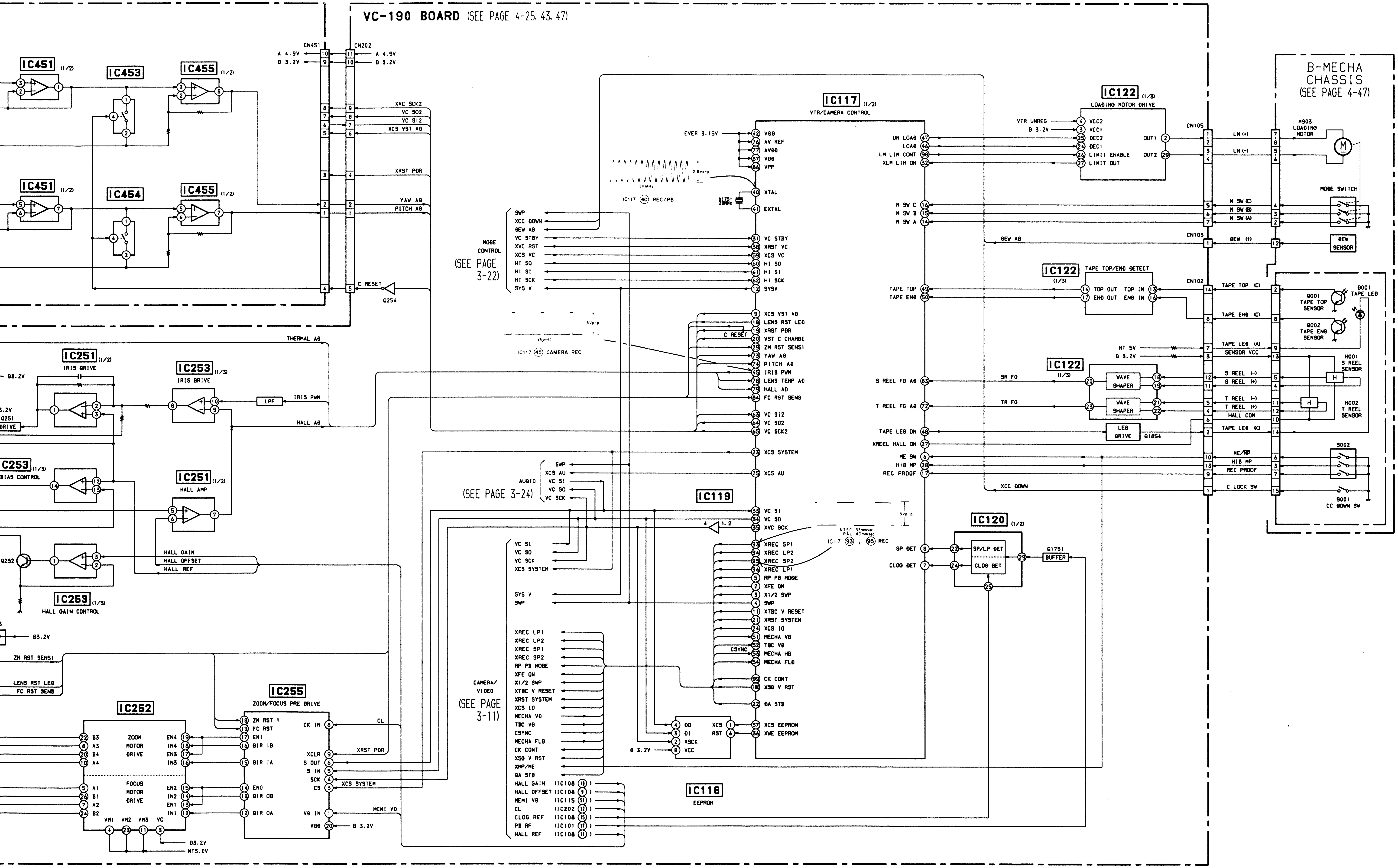

IC106
CHROMA PROCESS
IC105
Y PROCESS
LINE LOCK AFC
VCO
BUFFER
IC104
CHARACTER GENERATOR
IC102
IC103
IC101
REC/PB AMP
IC108
D/A CONVERTER (EVR)
IC117
CONTINUED ON PAGE 3-8
IC106 (14) CAMERA REC
IC106 (14) REC
IC106 (10) CAMERA REC(NTSC)
IC106 (10) CAMERA REC(PAL)
IC106 (10) REC/PB
IC106 (40) CAMERA REC
IC106 (47) CAMERA REC
IC106 (46) CAMERA REC
IC106 (29) CAMERA REC
IC105 (69) CAMERA REC
IC105 (69) REC/PB
IC105 (35) CAMERA REC
CH-1: IC102 (22)
TRIG: IC102 (59) REC
IC101 (11) PB
TRIG: IC101 (21)
IC101 (5) REC/PB
TRIG: IC101 (21)
IC101 (3) REC
IC101 (17) PB
TRIG: IC101 (21)
IC103 (25) REC
IC103 (27) PB
IC101 (7) PB
IC103 (9),(10) REC/PB
IC103 (11),(12) REC/PB
IC103 (13),(14) REC/PB
IC103 (15),(16) REC/PB
IC101 (21) REC/PB
AFC FO (CN207 (14))
TBC V8


VC-190 BOARD
(SEE PAGE 4-29, 33, 39, 55)
IC101
REC/PB AMP
IC102
IC103
IC104
CHARACTER GENERATOR
IC108
D/A CONVERTER
(EVR)
IC106 ⑩ CAMERA REC(NTSC)
IC106 ⑩ CAMERA REC(PAL)
IC106 ⑩ REC/PB
IC101 ⑤ REC/PB
TRIG: IC101 ㉑
IC101 ③ REC
IC101 ⑰ PB
TRIG: IC101 ㉑
IC101 ㉑ REC
IC101 ㊹, ㊽ REC
CH-1: IC102 ㉒
TRIG: IC102 (59) REC
IC101 ⑪ PB
TRIG: IC101 ㉑
IC105 (69) CAMERA REC
IC105 (69) REC/PB
IC105 ㉟ CAMERA REC
Y PROCESS
BUFFER
VCO
AFC FO (CN207 ⑭)
LPF
FILTER
REC C
REC Y
PB Y
PB C
AGC
BPF
AMP
MUTE
SW
REC AMP
PB AMP
AGC MIX AMP
Q1016 BUFFER
Q1015 MUTE
Q1013
Q1004, 1012 MUTE
Q1007, 1009 MUTE
Q1005, 1011 MUTE
Q1006, 1010 MUTE
NTSC MODEL
PAL MODEL
Q1001-1003, 1008
FLYING ERASE OSC
XFE ON
CN101
VIDEO HEAD
CH LP2
CH LP1
CH SP1
CH SP2
FLYING ERASE
IC101 ㊷ REC
Q1001 Ⓒ REC
IC103 ㉕ REC
IC103 ㉗ PB
IC101 ⑦ PB
IC101 ㉑ REC/PB
IC103 ⑨,⑩ REC/PB
IC103 ⑪,⑫ REC/PB
IC103 ⑬,⑭ REC/PB
IC103 ⑮,⑯ REC/PB
CN204
TIME CODE MODEL
CN207
CPC (FOR CHECK)
MODE CONTROL
(SEE PAGE 3-22)
AUDIO
(SEE PAGE 3-23)
SERVO (SEE PAGE 3-15)
VTR/CAMERA CONTROL
(SEE PAGE 3-13)
MODE CONTROL (HN-35)
(SEE PAGE 3-22)
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR820E/TR825E/TR920E
TIME CODE MODEL:CCD-TR825E

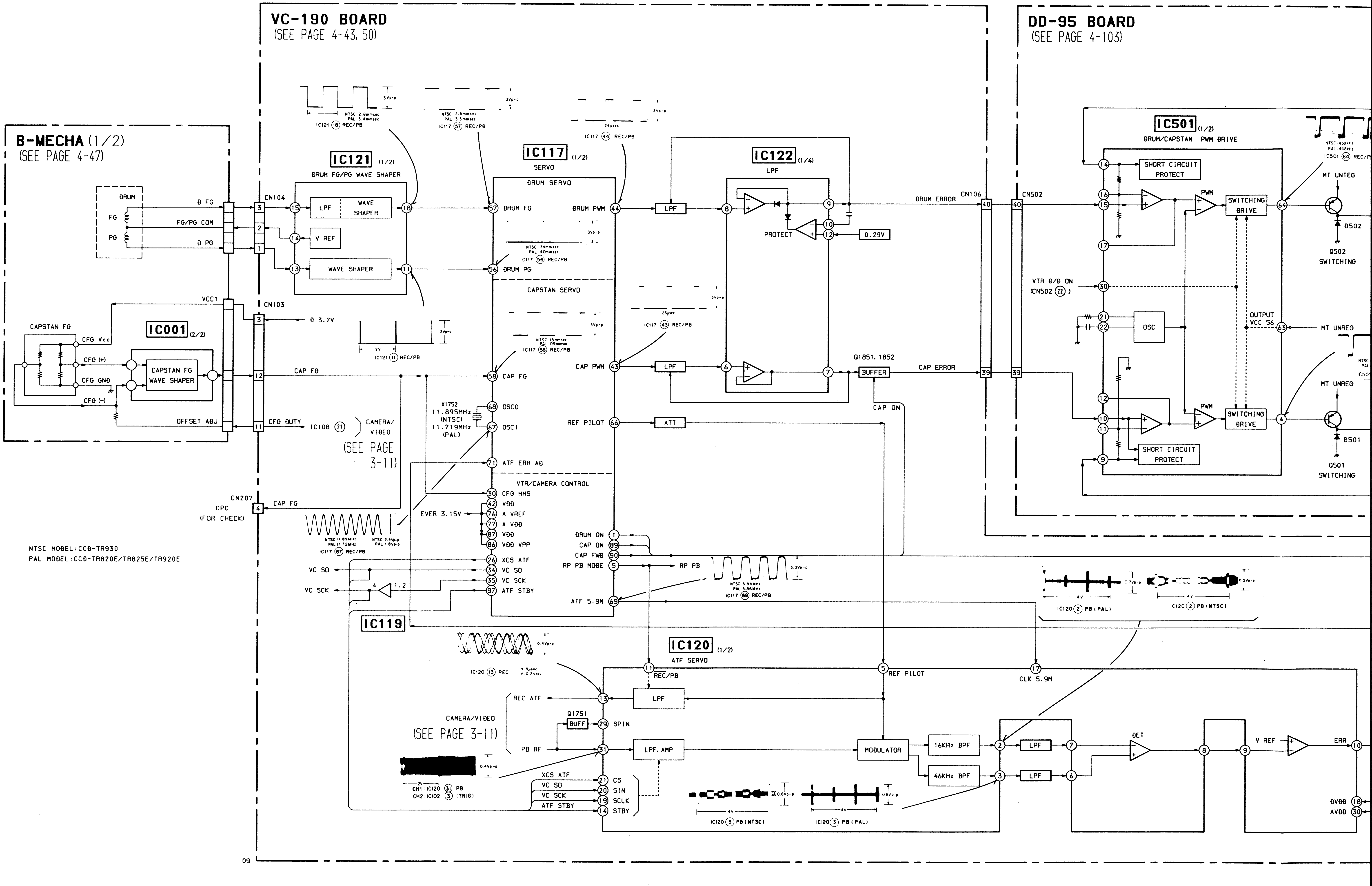
3-4. VTR/CAMERA CONTROL BLOCK DIAGRAM


SE-61 BOARD
(SEE PAGE 4-10)
VC-190 BOARD (SEE PAGE 4-25, 43, 47)
SE451
YAW SENSOR
SE452
PITCH SENSOR
A 4.9V
LPF
IC451 (1/2)
IC453
IC454
IC455 (1/2)
CN451
CN202
A 4.9V
B 3.2V
XVC SCK2
VC SO2
VC SI2
XCS VST AB
XRST PBR
YAW AB
PITCH AB
C RESET
Q254
IC117 (1/2)
VTR/CAMERA CONTROL
EVER 3.15V
VDD
AV REF
AVDD
VDD
VPP
XTAL
EXTAL
2.8Vp-p
20MHz
IC117 (40) REC/PB
X1751 20MHz
MODE CONTROL
(SEE PAGE 3-22)
SWP
XCC DOWN
DEW AB
VC STBY
XVC RST
XCS VC
HI SO
HI SI
HI SCK
SYS V
XRST VC
3Vp-p
26μsec
IC117 (45) CAMERA REC
XCS VST AB
LENS RST LED
XRST PBR
VST C CHARGE
ZM RST SENS1
IRIS PWM
LENS TEMP AB
HALL AB
FC RST SENS
VC SI2
VC SO2
VC SCK2
XCS SYSTEM
XCS AU
AUDIO
(SEE PAGE 3-24)
VC SI
VC SO
VC SCK
IC119
XVC SCK
NTSC 33msec
PAL 40msec
IC117 (93), (95)
XREC SP1
XREC LP2
XREC SP2
XREC LP1
RP PB MODE
XFE ON
X1/2 SWP
XTBC V RESET
XRST SYSTEM
XCS IO
MECHA VD
TBC VD
CSYNC
MECHA HD
MECHA FLD
CK CONT
XSD V RST
DA STB
XCS EEPROM
XWE EEPROM
DO
DI
XSCK
VCC
XCS
RST
B 3.2V
IC116
EEPROM
CAMERA/VIDEO
(SEE PAGE 3-11)
XMP/ME
HALL GAIN (IC108 (10))
HALL OFFSET (IC108 (9))
MEMI VD (IC115 (51))
CL (IC202 (12))
CLOG REF (IC108 (15))
PB RF (IC101 (17))
HALL REF (IC108 (11))
CN113
THERMAL AB
TEMP COM
TEMP OUT
M904 IRIS METER
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
B3.2V
Q251
DRIVE
IC251 (1/2)
IRIS DRIVE
IC253 (1/3)
IRIS DRIVE
LPF
HALL AB
IC253 (1/3)
HALL BIAS CONTROL
IC251 (1/2)
HALL AMP
BIAS (+)
HALL (+)
HALL (-)
BIAS (-)
H
GND
HALL GAIN
HALL OFFSET
HALL REF
Q252
IC253 (1/3)
HALL GAIN CONTROL
ZOOM LENS UNIT
SENSE VCC
Q253
ZOOM SENSER
ZM RST 1
ZM RST SENS1
LENS RST LED
FC RST SENS
FOCUS SENSER
FC RST
M906 ZOOM MOTOR
ZM XA
ZM A
ZM XB
ZM B
M905 FOCUS MOTOR
FC A
FC XA
FC B
FC XB
IC252
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
B3
A3
B4
A4
A1
B1
A2
B2
EN4
IN4
EN3
IN3
EN2
IN2
EN1
IN1
VM1
VM2
VM3
VC
B3.2V
MT5.0V
IC255
ZOOM/FOCUS PRE DRIVE
ZM RST 1
FC RST
EN1
DIR 1B
DIR 1A
EN0
DIR 0B
DIR 0A
CK IN
XCLR
S OUT
S IN
SCK
CS
VD IN
VDD
CL
XRST PBR
XCS SYSTEM
MEMI VD
B 3.2V
09

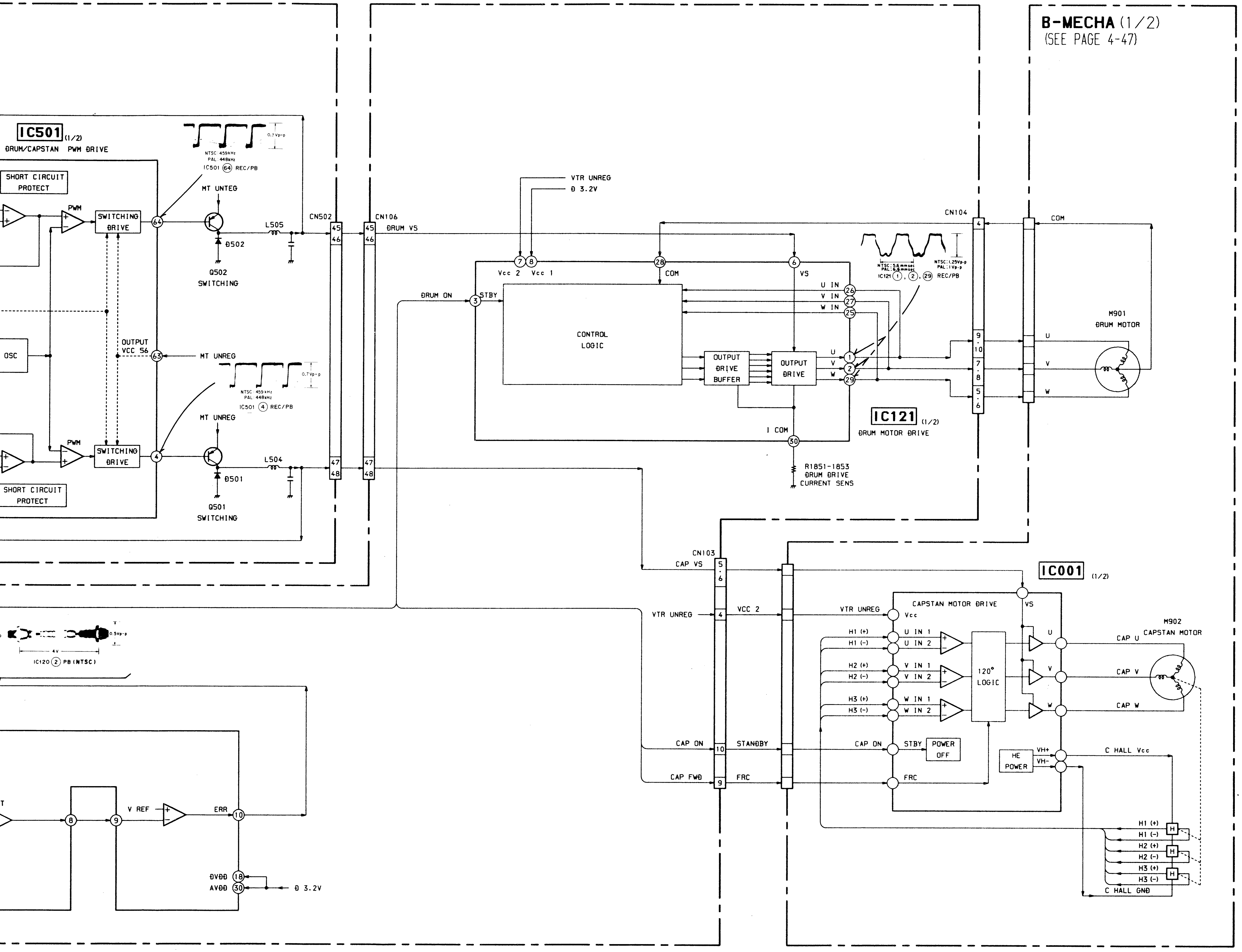
DIAGRAM


VC-190 BOARD (SEE PAGE 4-25, 43, 47)
B-MECHA CHASSIS (SEE PAGE 4-47)
IC451 (1/2)
IC453
IC455 (1/2)
IC454
CN451
CN202
A 4.9V
D 3.2V
XVC SCK2
VC SO2
VC SI2
XCS VST AD
XRST PDR
YAW AD
PITCH AD
C RESET
Q254
THERMAL AD
IC251 (1/2) IRIS DRIVE
IC253 (1/3) IRIS DRIVE
LPF
IRIS PWM
HALL AD
IC253 (1/3) BIAS CONTROL
IC251 (1/2) HALL AMP
HALL GAIN
HALL OFFSET
HALL REF
Q251 DRIVE
Q252
IC253 (1/3) HALL GAIN CONTROL
D3.2V
ZM RST SENS1
LENS RST LED
FC RST SENS
IC252
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
IC255 ZOOM/FOCUS PRE DRIVE
ZM RST 1
FC RST
EN1
DIR 1B
DIR 1A
EN0
DIR 0B
DIR 0A
CK IN
XCLR
S OUT
S IN
SCK
CS
VD IN
VDD
CL
XCS SYSTEM
MEMI VD
D3.2V
MT5.0V
IC117 (1/2) VTR/CAMERA CONTROL
EVER 3.15V
VDD
AV REF
AVDD
VPP
XTAL
EXTAL
X1751 20MHz
2.8Vp-p
20MHz
IC117 (40) REC/PB
MODE CONTROL (SEE PAGE 3-22)
SWP
XCC DOWN
DEW AD
VC STBY
XVC RST
XCS VC
HI SO
HI SI
HI SCK
SYS V
XRST VC
SYSV
3Vp-p
26μsec
IC117 (45) CAMERA REC
XCS VST AD
LENS RST LED
XRST PDR
VST C CHARGE
ZM RST SENS1
YAW AD
PITCH AD
IRIS PWM
LENS TEMP AD
HALL AD
FC RST SENS
VC SI2
VC SO2
VC SCK2
XCS SYSTEM
XCS AU
AUDIO (SEE PAGE 3-24)
VC SI
VC SO
VC SCK
IC119
XVC SCK
NTSC 33msec PAL 40msec
3Vp-p
IC117 (93), (95) REC
XREC SP1
XREC LP2
XREC SP2
XREC LP1
RP PB MODE
XFE ON
X1/2 SWP
XTBC V RESET
XRST SYSTEM
XCS IO
MECHA VD
TBC VD
MECHA HD
MECHA FLD
CSYNC
CK CONT
XSD V RST
DA STB
CAMERA/VIDEO (SEE PAGE 3-11)
XMP/ME
HALL GAIN (IC108 (8))
HALL OFFSET (IC108 (9))
MEMI VD (IC115 (51))
CL (IC202 (12))
CLOG REF (IC108 (15))
PB RF (IC101 (17))
HALL REF (IC108 (11))
DO
DI
XSCK
VCC
XCS
RST
XCS EEPROM
XWE EEPROM
IC116 EEPROM
UN LOAD
LOAD
LM LIM CONT
XLM LIM ON
M SW C
M SW B
M SW A
TAPE TOP
TAPE END
S REEL FG AD
T REEL FG AD
TAPE LED ON
XREEL HALL ON
ME SW
HI8 MP
REC PROOF
SP DET
CLOG DET
IC120 (1/2)
SP/LP DET
CLOG DET
Q1751 BUFFER
IC122 (1/3) LOADING MOTOR DRIVE
VTR UNREG
VCC2
VCC1
DEC2
DEC1
LIMIT ENABLE
LIMIT OUT
OUT1
OUT2
CN105
LM (+)
LM (-)
M903 LOADING MOTOR
MODE SWITCH
M SW (C)
M SW (B)
M SW (A)
CN103
DEW AD
DEW (+)
DEW SENSOR
IC122 (1/3) TAPE TOP/END DETECT
TOP OUT
END OUT
TOP IN
END IN
CN102
TAPE TOP (C)
TAPE END (C)
TAPE LED (A)
SENSOR VCC
Q001 TAPE TOP SENSOR
Q002 TAPE END SENSOR
D001 TAPE LED
MT 5V
IC122 (1/3)
SR FG
TR FG
WAVE SHAPER
S REEL (-)
S REEL (+)
T REEL (-)
T REEL (+)
HALL COM
H001 S REEL SENSOR
H002 T REEL SENSOR
LED DRIVE
Q1854
TAPE LED (K)
ME/MP
HI8 MP
REC PROOF
C LOCK SW
S002
S001 CC DOWN SW
XCC DOWN

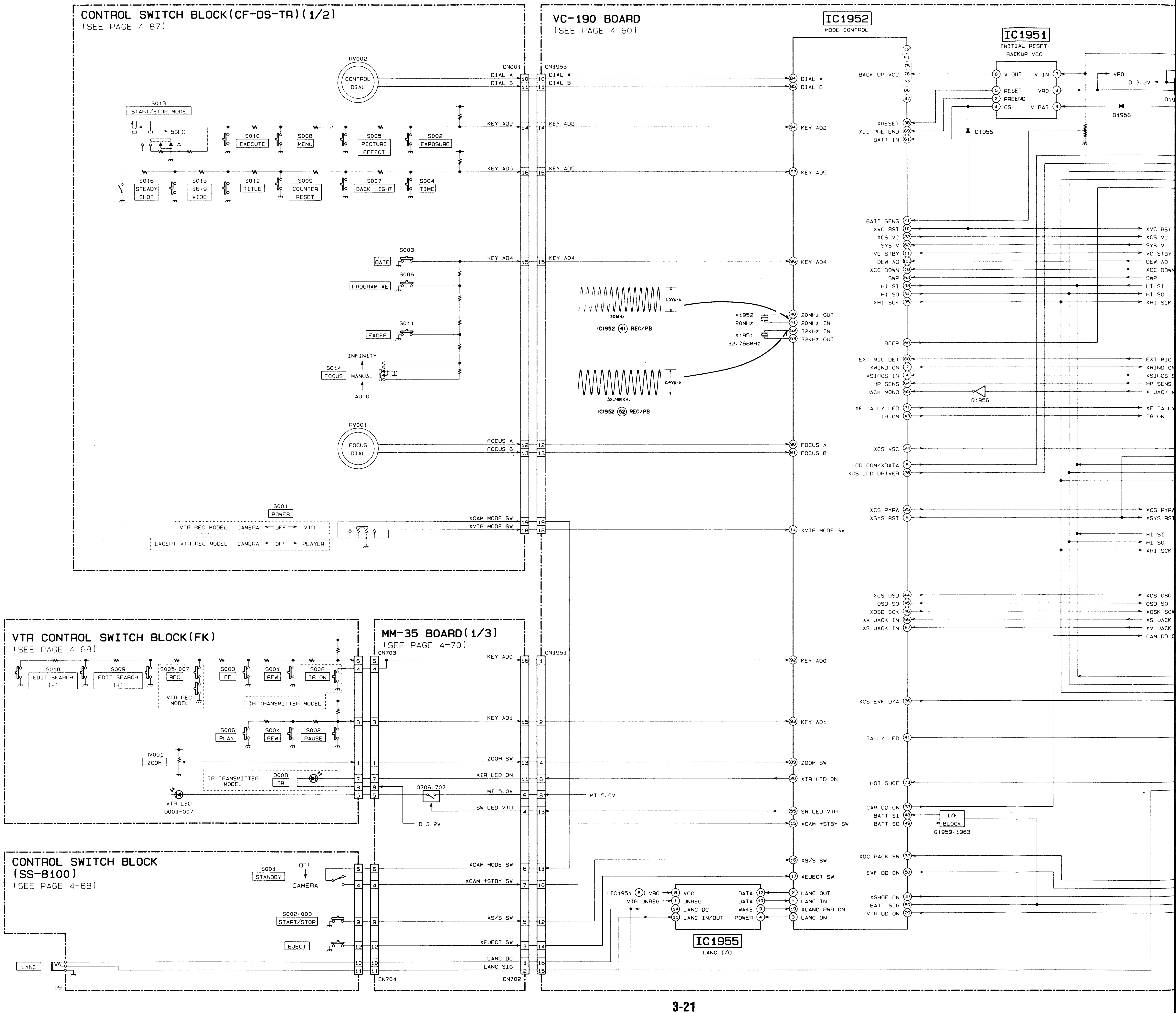
3-5. SERVO BLOCK DIAGRAM

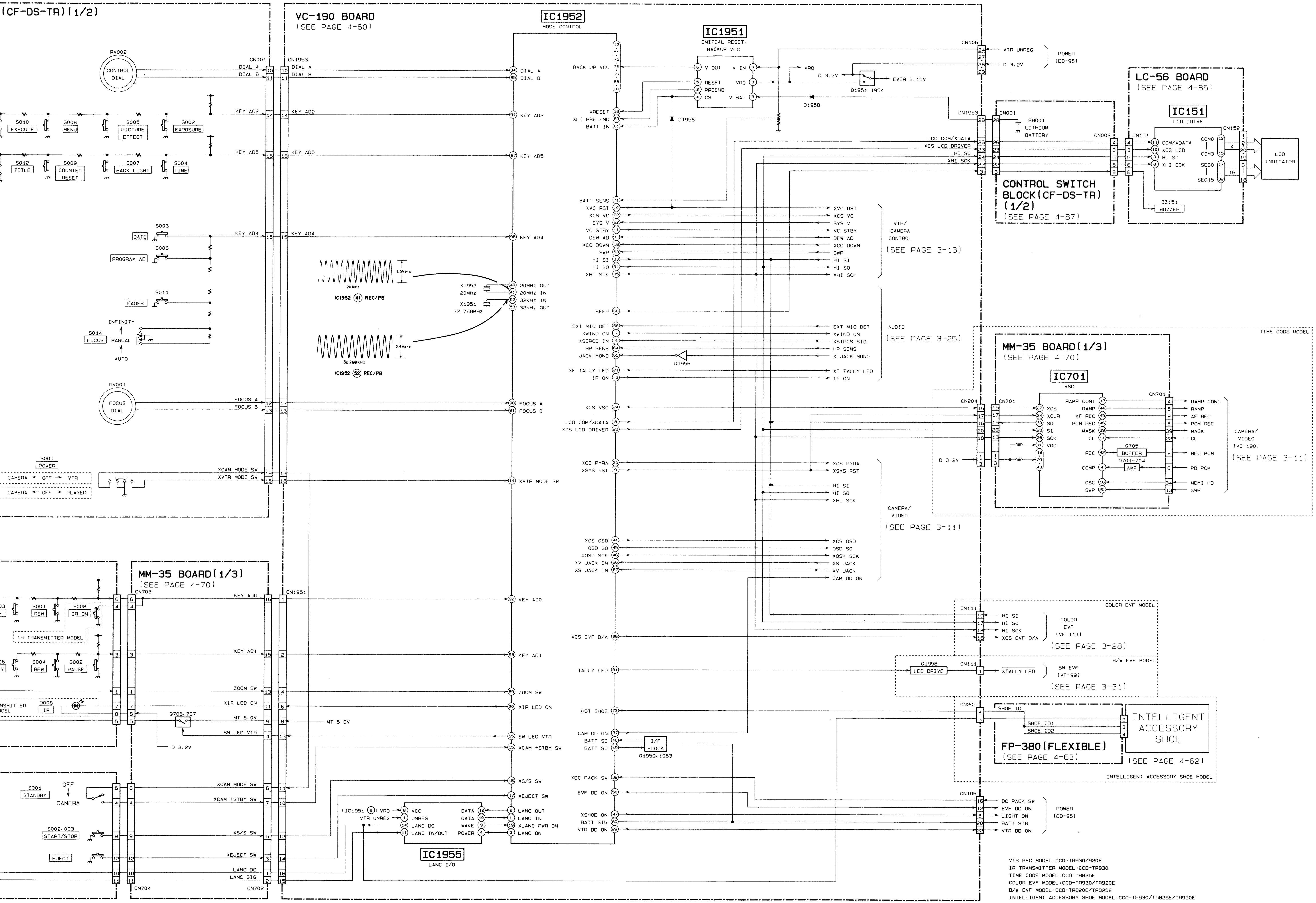

VC-190 BOARD
(SEE PAGE 4-43, 50)
DD-95 BOARD
(SEE PAGE 4-103)
B-MECHA (1/2)
(SEE PAGE 4-47)
DRUM
FG
PG
D FG
FG/PG COM
D PG
CN104
IC121 (1/2)
DRUM FG/PG WAVE SHAPER
LPF
WAVE SHAPER
V REF
WAVE SHAPER
NTSC 2.8msec
PAL 3.4msec
IC121 ⑱ REC/PB
NTSC 2.8msec
PAL 3.3msec
IC117 (57) REC/PB
IC117 (44) REC/PB
3Vp-p
26μsec
IC117 (1/2)
SERVO
DRUM SERVO
DRUM FG
DRUM PWM
DRUM PG
NTSC 34msec
PAL 40msec
IC117 (56) REC/PB
CAPSTAN SERVO
CAP FG
CAP PWM
NTSC 15msec
PAL 09msec
IC117 (58) REC/PB
IC117 (43) REC/PB
OSCO
OSCI
X1752
11.895MHz
(NTSC)
11.719MHz
(PAL)
REF PILOT
ATF ERR AD
VTR/CAMERA CONTROL
CFG HMS
VDD
A VREF
A VDD
VDD
VDD VPP
EVER 3.15V
XCS ATF
VC SO
VC SCK
ATF STBY
DRUM ON
CAP ON
CAP FWD
RP PB MODE
ATF 5.9M
RP PB
NTSC 5.94MHz
PAL 5.86MHz
IC117 (69) REC/PB
NTSC 11.89MHz
PAL 11.72MHz
NTSC 2.4Vp-p
PAL 1.8Vp-p
IC117 (67) REC/PB
IC119
IC122 (1/4)
LPF
PROTECT
0.29V
DRUM ERROR
CN106
Q1851, 1852
BUFFER
CAP ERROR
CAP ON
ATT
VCC1
CN103
D 3.2V
CAPSTAN FG
CFG Vcc
CFG (+)
CFG GND
CFG (−)
IC001 (2/2)
CAPSTAN FG WAVE SHAPER
CAP FG
OFFSET ADJ
CFG DUTY
IC108 (21)
CAMERA/VIDEO
(SEE PAGE 3-11)
2V
IC121 (11) REC/PB
CN207
CPC
(FOR CHECK)
CAP FG
VC SO
VC SCK
IC120 (1/2)
ATF SERVO
REC/PB
REF PILOT
CLK 5.9M
REC ATF
LPF
Q1751
BUFF
SPIN
PB RF
LPF, AMP
MODULATOR
16KHz BPF
46KHz BPF
LPF
DET
V REF
ERR
DVDD
AVDD
XCS ATF
VC SO
VC SCK
ATF STBY
CS
SIN
SCLK
STBY
CAMERA/VIDEO
(SEE PAGE 3-11)
IC120 (13) REC
H: 5μsec
V: 0.2Vdiv
0.4Vp-p
CH1: IC120 (3) PB
CH2: IC102 (3) (TRIG)
IC120 (3) PB (NTSC)
IC120 (3) PB (PAL)
IC120 (2) PB (PAL)
IC120 (2) PB (NTSC)
0.6Vp-p
0.7Vp-p
0.5Vp-p
4V
CN502
IC501 (1/2)
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
OSC
OUTPUT VCC 56
VTR D/D ON
(CN502 (22))
NTSC 459kHz
PAL 448kHz
IC501 (64) REC/P
MT UNTEG
Q502
SWITCHING
Q501
SWITCHING
MT UNREG
MT UNREG
09

NTSC MODEL: CCD-TR930
PAL MODEL: CCD-TR820E/TR825E/TR920E


IC501 (1/2)
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
64
0.7Vp-p
NTSC 459kHz
PAL 448kHz
IC501 64 REC/PB
MT UNREG
Q502 SWITCHING
D502
L505
CN502
45
46
OSC
OUTPUT VCC 56
63
MT UNREG
0.7Vp-p
NTSC 459kHz
PAL 448kHz
IC501 4 REC/PB
MT UNREG
SWITCHING DRIVE
4
L504
D501
Q501 SWITCHING
47
48
SHORT CIRCUIT PROTECT
CN106
DRUM VS
VTR UNREG
D 3.2V
Vcc 2
Vcc 1
COM
VS
DRUM ON
STBY
CONTROL LOGIC
U IN
V IN
W IN
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
U
V
W
I COM
IC121 (1/2)
DRUM MOTOR DRIVE
R1851-1853
DRUM DRIVE CURRENT SENS
NTSC:5.6msec
PAL:6.8msec
NTSC:1.25Vp-p
PAL:1Vp-p
IC121 1, 2, 29 REC/PB
CN104
COM
B-MECHA (1/2)
(SEE PAGE 4-47)
M901
DRUM MOTOR
4V
0.5Vp-p
IC120 2 PB (NTSC)
V REF
ERR
DVDD 18
AVDD 30
D 3.2V
CN103
CAP VS
VTR UNREG
VCC 2
CAP ON
STANDBY
CAP FWD
FRC
IC001 (1/2)
CAPSTAN MOTOR DRIVE
Vcc
VS
H1 (+)
H1 (-)
U IN 1
U IN 2
H2 (+)
H2 (-)
V IN 1
V IN 2
H3 (+)
H3 (-)
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
HE POWER
VH+
VH-
M902
CAPSTAN MOTOR
CAP U
CAP V
CAP W
C HALL Vcc
C HALL GND

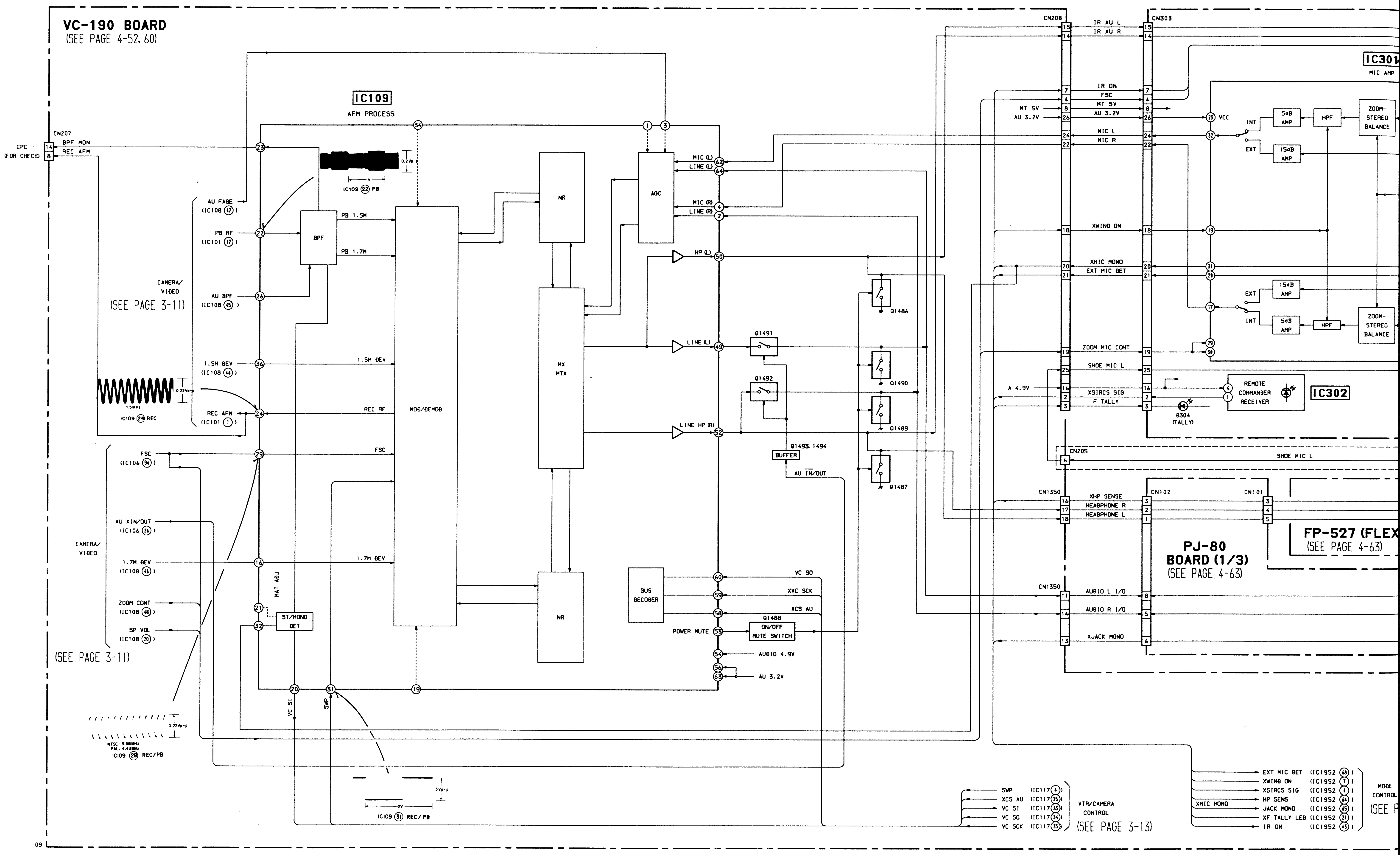
3-6. MODE CONTROL BLOCK DIAGRAM

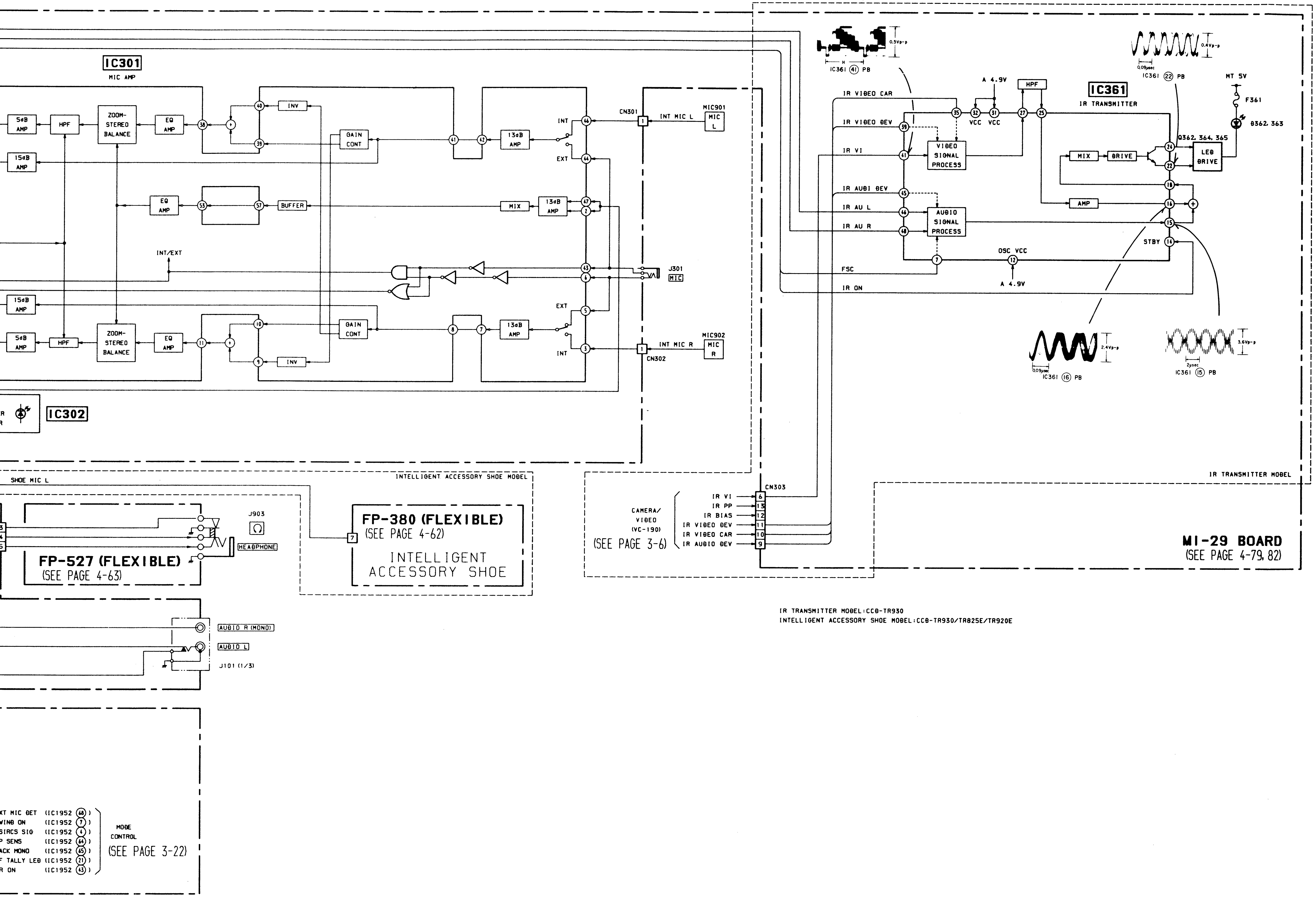

CONTROL SWITCH BLOCK(CF-DS-TR)(1/2)
(SEE PAGE 4-87)
RV002 CONTROL DIAL
S013 START/STOP MODE
5SEC
S010 EXECUTE
S008 MENU
S005 PICTURE EFFECT
S002 EXPOSURE
S016 STEADY SHOT
S015 16:9 WIDE
S012 TITLE
S009 COUNTER RESET
S007 BACK LIGHT
S004 TIME
S003 DATE
S006 PROGRAM AE
S011 FADER
S014 FOCUS
INFINITY
MANUAL
AUTO
RV001 FOCUS DIAL
S001 POWER
VTR REC MODEL CAMERA ← OFF → VTR
EXCEPT VTR REC MODEL CAMERA ← OFF → PLAYER
CN001
DIAL A
DIAL B
KEY AD2
KEY AD5
KEY AD4
FOCUS A
FOCUS B
XCAM MODE SW
XVTR MODE SW
VC-190 BOARD
(SEE PAGE 4-60)
CN1953
IC1952
MODE CONTROL
IC1951
INITIAL RESET, BACKUP VCC
V OUT
V IN
RESET
VRO
PREEND
CS
V BAT
VRO
D 3.2V
D1958
D1956
BACK UP VCC
XRESET
XLI PRE END
BATT IN
DIAL A
DIAL B
KEY AD2
KEY AD5
KEY AD4
1.5Vp-p
20MHz
IC1952 (41) REC/PB
X1952 20MHz
X1951 32.768MHz
20MHz OUT
20MHz IN
32kHz IN
32kHz OUT
2.4Vp-p
32.768KHz
IC1952 (52) REC/PB
FOCUS A
FOCUS B
XVTR MODE SW
BATT SENS
XVC RST
XCS VC
SYS V
VC STBY
DEW AD
XCC DOWN
SWP
HI SI
HI SO
XHI SCK
BEEP
EXT MIC DET
XWIND ON
XSIRCS IN
HP SENS
JACK MONO
Q1956
XF TALLY LED
IR ON
XCS VSC
LCD COM/XDATA
XCS LCD DRIVER
XCS PYRA
XSYS RST
HI SI
HI SO
XHI SCK
XCS OSD
OSD SO
XOSD SCK
XV JACK IN
XS JACK IN
CAM DD ON
VTR CONTROL SWITCH BLOCK(FK)
(SEE PAGE 4-68)
S010 EDIT SEARCH (-)
S009 EDIT SEARCH (+)
S005, 007 REC
VTR REC MODEL
S003 FF
S001 REW
S008 IR ON
IR TRANSMITTER MODEL
S006 PLAY
S004 REW
S002 PAUSE
RV001 ZOOM
IR TRANSMITTER MODEL
D008 IR
VTR LED D001-007
MM-35 BOARD(1/3)
(SEE PAGE 4-70)
CN703
KEY AD0
KEY AD1
ZOOM SW
XIR LED ON
MT 5.0V
SW LED VTR
Q706, 707
D 3.2V
CN1951
MT 5.0V
KEY AD0
KEY AD1
XCS EVF D/A
TALLY LED
ZOOM SW
XIR LED ON
HOT SHOE
SW LED VTR
XCAM +STBY SW
CAM DD ON
BATT SI
BATT SO
I/F BLOCK
Q1959, 1963
XDC PACK SW
XS/S SW
XEJECT SW
EVF DD ON
(IC1951 (8)) VRO
VTR UNREG
VCC
UNREG
LANC DC
LANC IN/OUT
DATA
DATA
WAKE
POWER
LANC OUT
LANC IN
XLANC PWR ON
LANC ON
XSHOE ON
BATT SIG
VTR DD ON
IC1955
LANC I/O
CONTROL SWITCH BLOCK (SS-8100)
(SEE PAGE 4-68)
S001 STANDBY
OFF
CAMERA
S002, 003 START/STOP
EJECT
LANC
XCAM MODE SW
XCAM +STBY SW
XS/S SW
XEJECT SW
LANC DC
LANC SIG
CN704
CN702


(CF-DS-TR)(1/2)
VC-190 BOARD
(SEE PAGE 4-60)
IC1952
MODE CONTROL
IC1951
INITIAL RESET, BACKUP VCC
V OUT
V IN
RESET
VRO
PREEND
CS
V BAT
Q1951-1954
EVER 3.15V
D1958
D1956
CN106
VTR UNREG
D 3.2V
POWER (DD-95)
RV002
CONTROL DIAL
CN001
DIAL A
DIAL B
CN1953
S010 EXECUTE
S008 MENU
S005 PICTURE EFFECT
S002 EXPOSURE
KEY AD2
S012 TITLE
S009 COUNTER RESET
S007 BACK LIGHT
S004 TIME
KEY AD5
S003 DATE
S006 PROGRAM AE
S011 FADER
KEY AD4
S014 FOCUS
INFINITY
MANUAL
AUTO
RV001
FOCUS DIAL
FOCUS A
FOCUS B
S001 POWER
CAMERA ← OFF → VTR
CAMERA ← OFF → PLAYER
XCAM MODE SW
XVTR MODE SW
BACK UP VCC
XRESET
XLI PRE END
BATT IN
1.5Vp-p
20MHz
IC1952 (41) REC/PB
2.4Vp-p
32.768KHz
IC1952 (52) REC/PB
X1952 20MHz
X1951 32.768MHz
20MHz OUT
20MHz IN
32kHz IN
32kHz OUT
BATT SENS
XVC RST
XCS VC
SYS V
VC STBY
DEW AD
XCC DOWN
SWP
HI SI
HI SO
XHI SCK
VTR/CAMERA CONTROL
(SEE PAGE 3-13)
BEEP
EXT MIC DET
XWIND ON
XSIRCS IN
XSIRCS SIG
HP SENS
JACK MONO
X JACK MONO
Q1956
XF TALLY LED
IR ON
AUDIO
(SEE PAGE 3-25)
XCS VSC
LCD COM/XDATA
XCS LCD DRIVER
XVTR MODE SW
XCS PYRA
XSYS RST
CAMERA/VIDEO
(SEE PAGE 3-11)
XCS OSD
OSD SO
XOSD SCK
XOSK SCK
XV JACK IN
XS JACK IN
XS JACK
XV JACK
CAM DD ON
KEY AD0
KEY AD1
ZOOM SW
XIR LED ON
MT 5.0V
SW LED VTR
XCAM +STBY SW
XS/S SW
XEJECT SW
LANC OUT
LANC IN
XLANC PWR ON
LANC ON
XCS EVF D/A
TALLY LED
HOT SHOE
BATT SI
BATT SO
I/F BLOCK
Q1959-1963
XDC PACK SW
EVF DD ON
XSHOE ON
BATT SIG
VTR DD ON
IC1955
LANC I/O
VCC
UNREG
LANC DC
LANC IN/OUT
DATA
WAKE
POWER
(IC1951 (8)) VRO
VTR UNREG
MM-35 BOARD(1/3)
(SEE PAGE 4-70)
CN703
S001 REW
S008 IR ON
IR TRANSMITTER MODEL
S004 REW
S002 PAUSE
D008 IR
Q706,707
D 3.2V
S001 STANDBY
OFF
CAMERA
S002,003 START/STOP
EJECT
LANC DC
LANC SIG
CN704
CN702
CN1951
LC-56 BOARD
(SEE PAGE 4-85)
IC151
LCD DRIVE
CN152
CN151
COM/XDATA
XCS LCD
HI SO
XHI SCK
COM0
COM3
SEG0
SEG15
LCD INDICATOR
BZ151 BUZZER
CN001
BH001 LITHIUM BATTERY
CN002
CONTROL SWITCH BLOCK(CF-DS-TR)(1/2)
(SEE PAGE 4-87)
TIME CODE MODEL
MM-35 BOARD(1/3)
(SEE PAGE 4-70)
IC701
VSC
CN204
CN701
XCS
XCLR
SO
SI
SCK
VDD
RAMP CONT
RAMP
AF REC
PCM REC
MASK
CL
REC
COMP
OSC
SWP
Q705 BUFFER
Q701-704 AMP
REC PCM
PB PCM
MEMI HD
CAMERA/VIDEO (VC-190)
(SEE PAGE 3-11)
COLOR EVF MODEL
CN111
HI SI
HI SO
HI SCK
XCS EVF D/A
COLOR EVF (VF-111)
(SEE PAGE 3-28)
B/W EVF MODEL
Q1958 LED DRIVE
XTALLY LED
BW EVF (VF-99)
(SEE PAGE 3-31)
CN205
SHOE ID
SHOE ID1
SHOE ID2
INTELLIGENT ACCESSORY SHOE
(SEE PAGE 4-62)
FP-380(FLEXIBLE)
(SEE PAGE 4-63)
INTELLIGENT ACCESSORY SHOE MODEL
DC PACK SW
EVF DD ON
LIGHT ON
BATT SIG
VTR DD ON
POWER (DD-95)

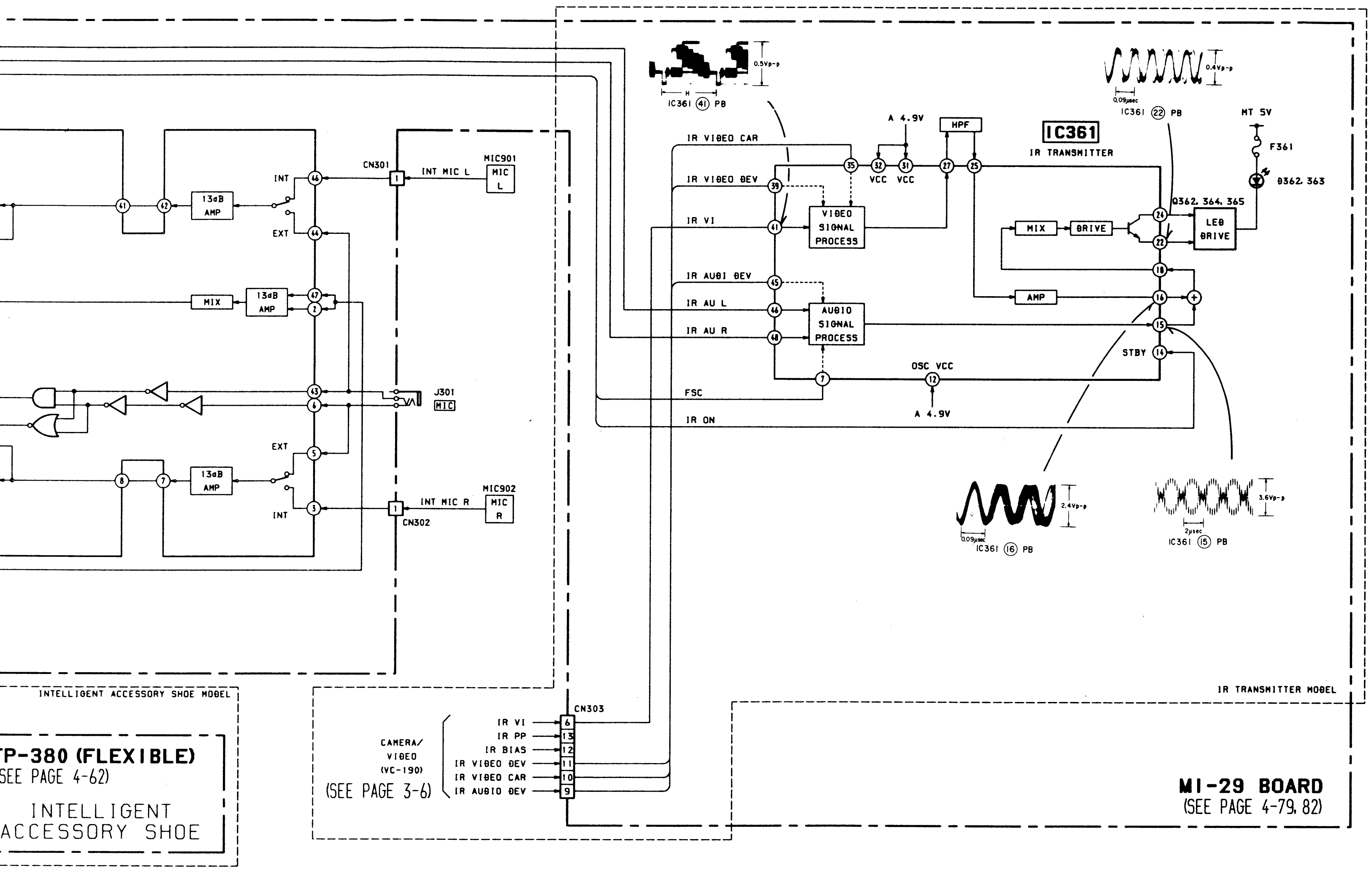
VTR REC MODEL: CCD-TR930/920E
IR TRANSMITTER MODEL: CCD-TR930
TIME CODE MODEL: CCD-TR825E
COLOR EVF MODEL: CCD-TR930/TR920E
B/W EVF MODEL: CCD-TR820E/TR825E
INTELLIGENT ACCESSORY SHOE MODEL: CCD-TR930/TR825E/TR920E

3-7. AUDIO BLOCK DIAGRAM


VC-190 BOARD
(SEE PAGE 4-52, 60)
IC109
AFM PROCESS
CN207
BPF MON
REC AFM
CPC
(FOR CHECK)
IC109 ㉒ PB
AU FADE
(IC108 ㊼)
PB RF
(IC101 ⑰)
BPF
PB 1.5M
PB 1.7M
CAMERA/
VIDEO
(SEE PAGE 3-11)
AU BPF
(IC108 ㊺)
1.5M DEV
(IC108 ㊹)
1.5MHz
IC109 ㉔ REC
0.22Vp-p
REC AFM
(IC101 ①)
REC RF
FSC
(IC106 (94))
AU XIN/OUT
(IC106 ㉖)
1.7M DEV
(IC108 ㊹)
ZOOM CONT
(IC108 ㊽)
SP VOL
(IC108 ㉘)
(SEE PAGE 3-11)
NTSC 3.58MHz
PAL 4.43MHz
IC109 ㉙ REC/PB
MAT ADJ
ST/MONO
DET
VC SI
SWP
3Vp-p
2V
IC109 ㉛ REC/PB
MOD/DEMOD
NR
MX
MTX
NR
AGC
MIC (L)
LINE (L)
MIC (R)
LINE (R)
HP (L)
LINE (L)
LINE HP (R)
Q1491
Q1492
Q1493, 1494
BUFFER
AU IN/OUT
Q1486
Q1490
Q1489
Q1487
BUS
DECODER
VC SO
XVC SCK
XCS AU
Q1488
ON/OFF
MUTE SWITCH
POWER MUTE
AUDIO 4.9V
AU 3.2V
CN208
CN303
IR AU L
IR AU R
IR ON
FSC
MT 5V
AU 3.2V
MIC L
MIC R
XWIND ON
XMIC MONO
EXT MIC DET
ZOOM MIC CONT
SHOE MIC L
XSIRCS SIG
F TALLY
A 4.9V
IC301
MIC AMP
VCC
INT
EXT
5dB
AMP
15dB
AMP
HPF
ZOOM-
STEREO
BALANCE
REMOTE
COMMANDER
RECEIVER
IC302
D304
(TALLY)
CN205
SHOE MIC L
CN1350
XHP SENSE
HEADPHONE R
HEADPHONE L
CN102
CN101
FP-527 (FLEX
(SEE PAGE 4-63)
PJ-80
BOARD (1/3)
(SEE PAGE 4-63)
AUDIO L I/O
AUDIO R I/O
XJACK MONO
SWP (IC117 ④)
XCS AU (IC117 ㉕)
VC SI (IC117 ㉝)
VC SO (IC117 ㉞)
VC SCK (IC117 ㉟)
VTR/CAMERA
CONTROL
(SEE PAGE 3-13)
EXT MIC DET (IC1952 ㊽)
XWIND ON (IC1952 ⑦)
XSIRCS SIG (IC1952 ④)
HP SENS (IC1952 ㊹)
JACK MONO (IC1952 ㊺)
XF TALLY LED (IC1952 ㉑)
IR ON (IC1952 ㊸)
XMIC MONO
MODE
CONTROL
(SEE P

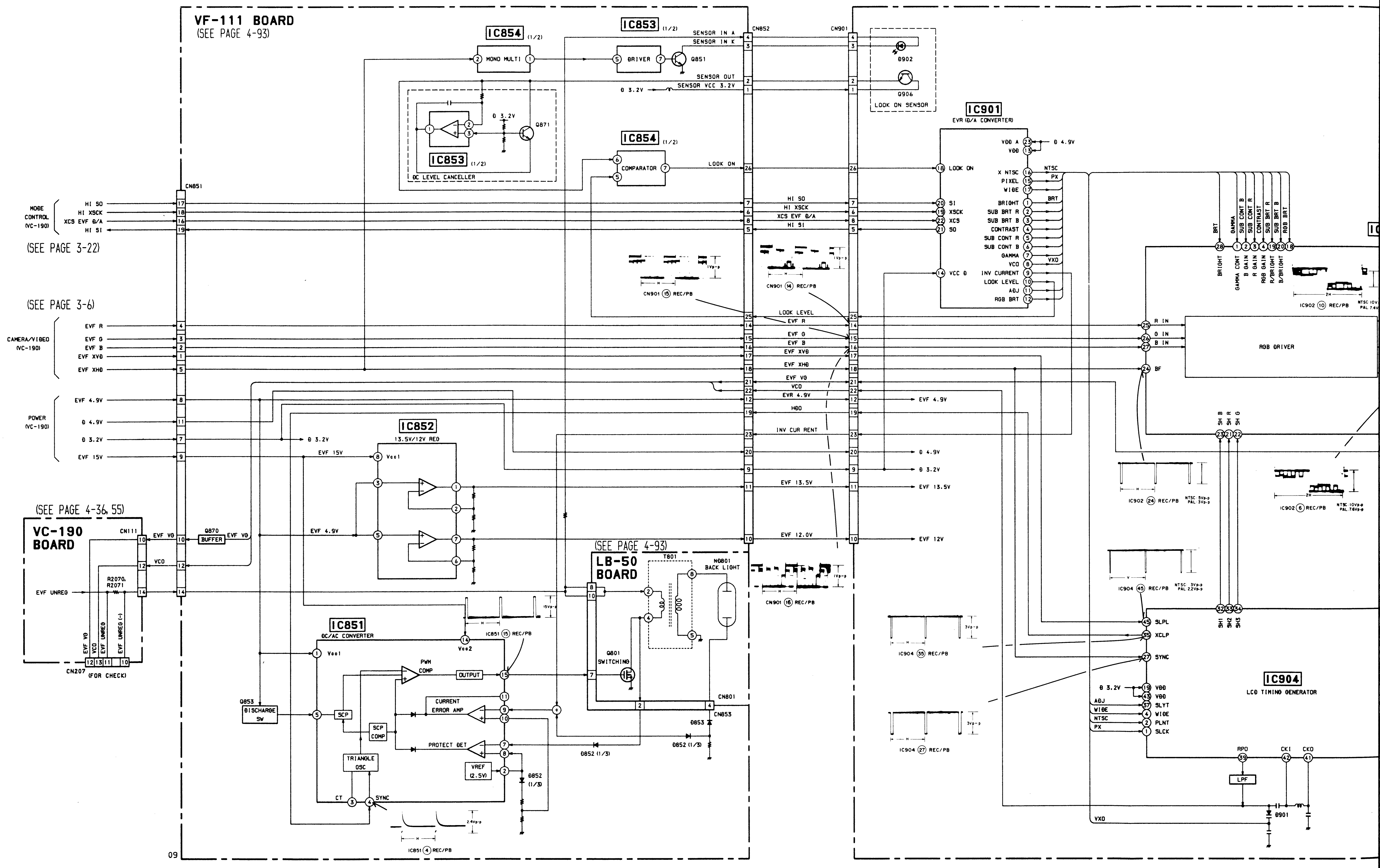

IC301
MIC AMP
5dB AMP
HPF
ZOOM-STEREO BALANCE
EQ AMP
INV
GAIN CONT
13dB AMP
INT
EXT
15dB AMP
EQ AMP
BUFFER
MIX
13dB AMP
INT/EXT
15dB AMP
5dB AMP
HPF
ZOOM-STEREO BALANCE
EQ AMP
GAIN CONT
13dB AMP
INV
EXT
INT
CN301
INT MIC L
MIC901
MIC L
J301
MIC
MIC902
INT MIC R
MIC R
CN302
IC302
IC361 41 PB
0.5Vp-p
H
IR VIDEO CAR
IR VIDEO DEV
IR VI
IR AUDI DEV
IR AU L
IR AU R
FSC
IR ON
A 4.9V
HPF
VCC VCC
VIDEO SIGNAL PROCESS
AUDIO SIGNAL PROCESS
OSC VCC
A 4.9V
IC361
IR TRANSMITTER
0.4Vp-p
0.09μsec
IC361 22 PB
MT 5V
F361
D362, 363
Q362, 364, 365
MIX
DRIVE
LED DRIVE
AMP
STBY
2.4Vp-p
0.09μsec
IC361 16 PB
3.6Vp-p
2μsec
IC361 15 PB
IR TRANSMITTER MODEL
CN303
CAMERA/VIDEO (VC-190) (SEE PAGE 3-6)
IR VI
IR PP
IR BIAS
IR VIDEO DEV
IR VIDEO CAR
IR AUDIO DEV
MI-29 BOARD (SEE PAGE 4-79, 82)
SHOE MIC L
INTELLIGENT ACCESSORY SHOE MODEL
FP-380 (FLEXIBLE) (SEE PAGE 4-62)
INTELLIGENT ACCESSORY SHOE
FP-527 (FLEXIBLE) (SEE PAGE 4-63)
J903
HEADPHONE
AUDIO R (MONO)
AUDIO L
J101 (1/3)
XT MIC DET (IC1952 ⑱)
WIND ON (IC1952 ⑦)
SIRCS SIG (IC1952 ④)
P SENS (IC1952 64)
ACK MONO (IC1952 65)
F TALLY LED (IC1952 ㉑)
R ON (IC1952 43)
MODE CONTROL (SEE PAGE 3-22)

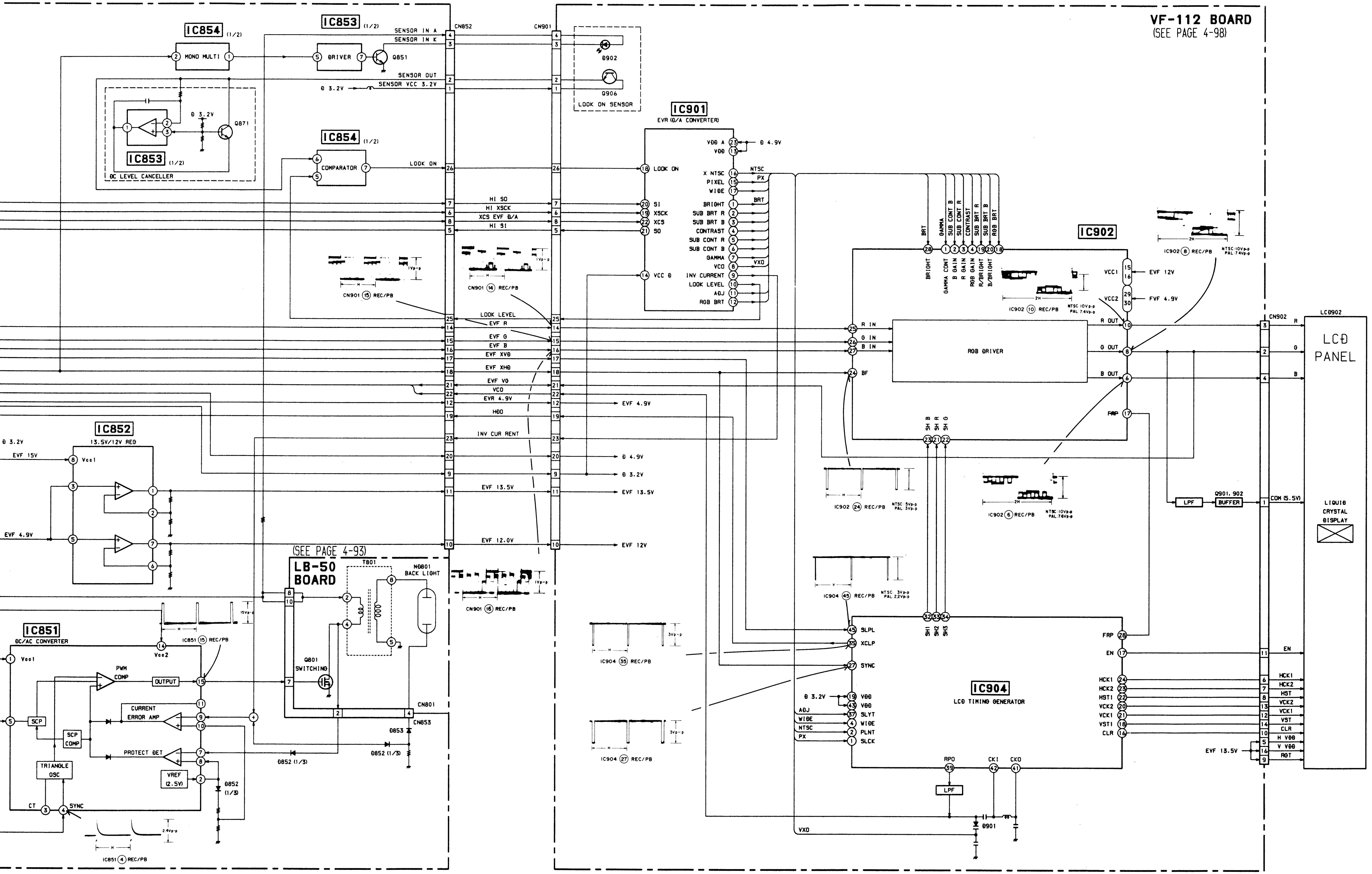
IR TRANSMITTER MODEL:CCD-TR930
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E


IC361 ㊶ PB
0.5Vp-p
H
IR VIDEO CAR
IR VIDEO DEV
IR VI
IR AUDI DEV
IR AU L
IR AU R
FSC
IR ON
VIDEO SIGNAL PROCESS
AUDIO SIGNAL PROCESS
A 4.9V
HPF
VCC
VCC
OSC VCC
A 4.9V
IC361
IR TRANSMITTER
IC361 ㉒ PB
0.09μsec
0.4Vp-p
MT 5V
F361
D362, 363
Q362, 364, 365
LED DRIVE
MIX
DRIVE
AMP
STBY
IC361 ⑯ PB
2.4Vp-p
0.09μsec
IC361 ⑮ PB
3.6Vp-p
2μsec
IR TRANSMITTER MODEL
CN301
INT MIC L
MIC901
MIC L
INT
EXT
13dB AMP
MIX
13dB AMP
J301
MIC
EXT
INT
13dB AMP
INT MIC R
MIC902
MIC R
CN302
INTELLIGENT ACCESSORY SHOE MODEL
FP-380 (FLEXIBLE)
(SEE PAGE 4-62)
INTELLIGENT ACCESSORY SHOE
CAMERA/VIDEO (VC-190)
(SEE PAGE 3-6)
IR VI
IR PP
IR BIAS
IR VIDEO DEV
IR VIDEO CAR
IR AUDIO DEV
CN303
MI-29 BOARD
(SEE PAGE 4-79, 82)

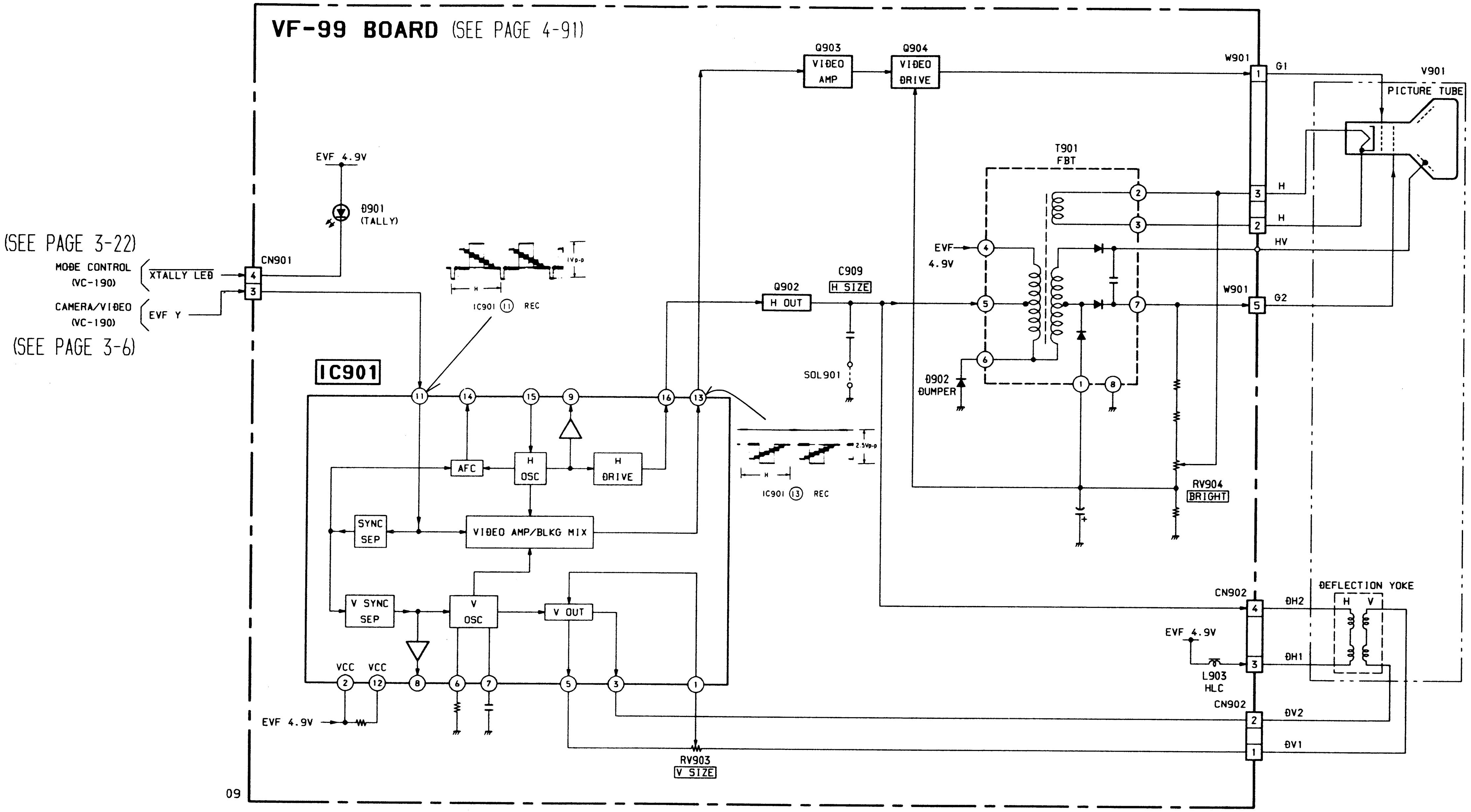
IR TRANSMITTER MODEL:CCD-TR930
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E

3-8. COLOR EVF BLOCK DIAGRAM

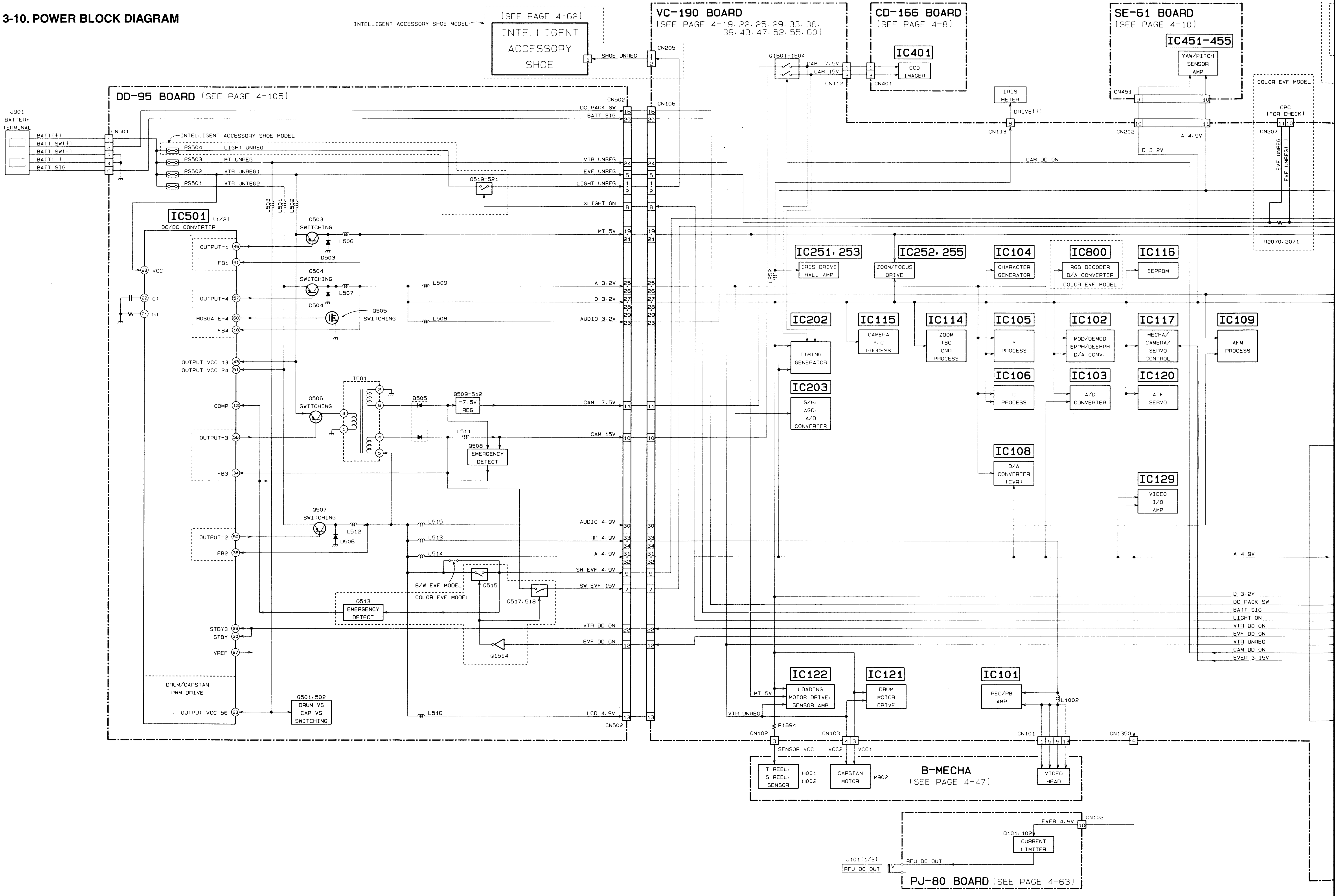

VF-111 BOARD
(SEE PAGE 4-93)
IC854 (1/2)
MONO MULTI
IC853 (1/2)
DRIVER
Q851
SENSOR IN A
SENSOR IN K
SENSOR OUT
SENSOR VCC 3.2V
D 3.2V
Q871
IC853 (1/2)
DC LEVEL CANCELLER
IC854 (1/2)
COMPARATOR
LOOK ON
CN851
CN852
CN901
D902
Q906
LOOK ON SENSOR
IC901
EVR (D/A CONVERTER)
VDD A
VDD
D 4.9V
LOOK ON
X NTSC
PIXEL
WIDE
BRIGHT
SUB BRT R
SUB BRT B
CONTRAST
SUB CONT R
SUB CONT B
GAMMA
VCO
INV CURRENT
LOOK LEVEL
ADJ
RGB BRT
SI
XSCK
XCS
SO
VCC D
NTSC
PX
BRT
VXO
MODE CONTROL (VC-190)
HI SO
HI XSCK
XCS EVF D/A
HI SI
(SEE PAGE 3-22)
(SEE PAGE 3-6)
CAMERA/VIDEO (VC-190)
EVF R
EVF G
EVF B
EVF XVD
EVF XHD
POWER (VC-190)
EVF 4.9V
D 4.9V
D 3.2V
EVF 15V
CN901 (15) REC/PB
CN901 (14) REC/PB
CN901 (16) REC/PB
1Vp-p
H
LOOK LEVEL
EVF VD
VCO
EVR 4.9V
HDD
INV CUR RENT
EVF 13.5V
EVF 12.0V
EVF 12V
IC852
13.5V/12V REG
Vcc1
EVF 4.9V
(SEE PAGE 4-36, 55)
VC-190 BOARD
CN111
EVF VD
VCO
EVF UNREG
R2070, R2071
CN207 (FOR CHECK)
EVF VD
VCO
EVF UNREG
EVF UNREG (-)
Q870
BUFFER
(SEE PAGE 4-93)
LB-50 BOARD
T801
ND801 BACK LIGHT
Q801 SWITCHING
CN801
CN853
D853
D852 (1/3)
IC851
DC/AC CONVERTER
Vcc2
IC851 (15) REC/PB
15Vp-p
PWM COMP
OUTPUT
SCP
SCP COMP
CURRENT ERROR AMP
PROTECT DET
VREF (2.5V)
TRIANGLE OSC
CT
SYNC
Q853
DISCHARGE SW
2.4Vp-p
IC851 (4) REC/PB
GAMMA CONT
B GAIN
R GAIN
SUB CONT R
SUB CONT B
CONTRAST
RGB GAIN
SUB BRT R
R/BRIGHT
SUB BRT B
B/BRIGHT
RGB BRT
IC902 (10) REC/PB
NTSC 10Vp-p PAL 7.4Vp-p
R IN
G IN
B IN
BF
RGB DRIVER
SH B
SH R
SH G
IC902 (24) REC/PB
NTSC 5Vp-p PAL 3Vp-p
IC902 (6) REC/PB
NTSC 10Vp-p PAL 7.6Vp-p
2H
IC904 (45) REC/PB
NTSC 3Vp-p PAL 2.2Vp-p
V
IC904 (35) REC/PB
3Vp-p
IC904 (27) REC/PB
SH1
SH2
SH3
SLPL
XCLP
SYNC
IC904
LCD TIMING GENERATOR
VDD
SLYT
WIDE
PLNT
SLCK
ADJ
WIDE
NTSC
PX
RPO
CKI
CKO
LPF
D901
VXO
09

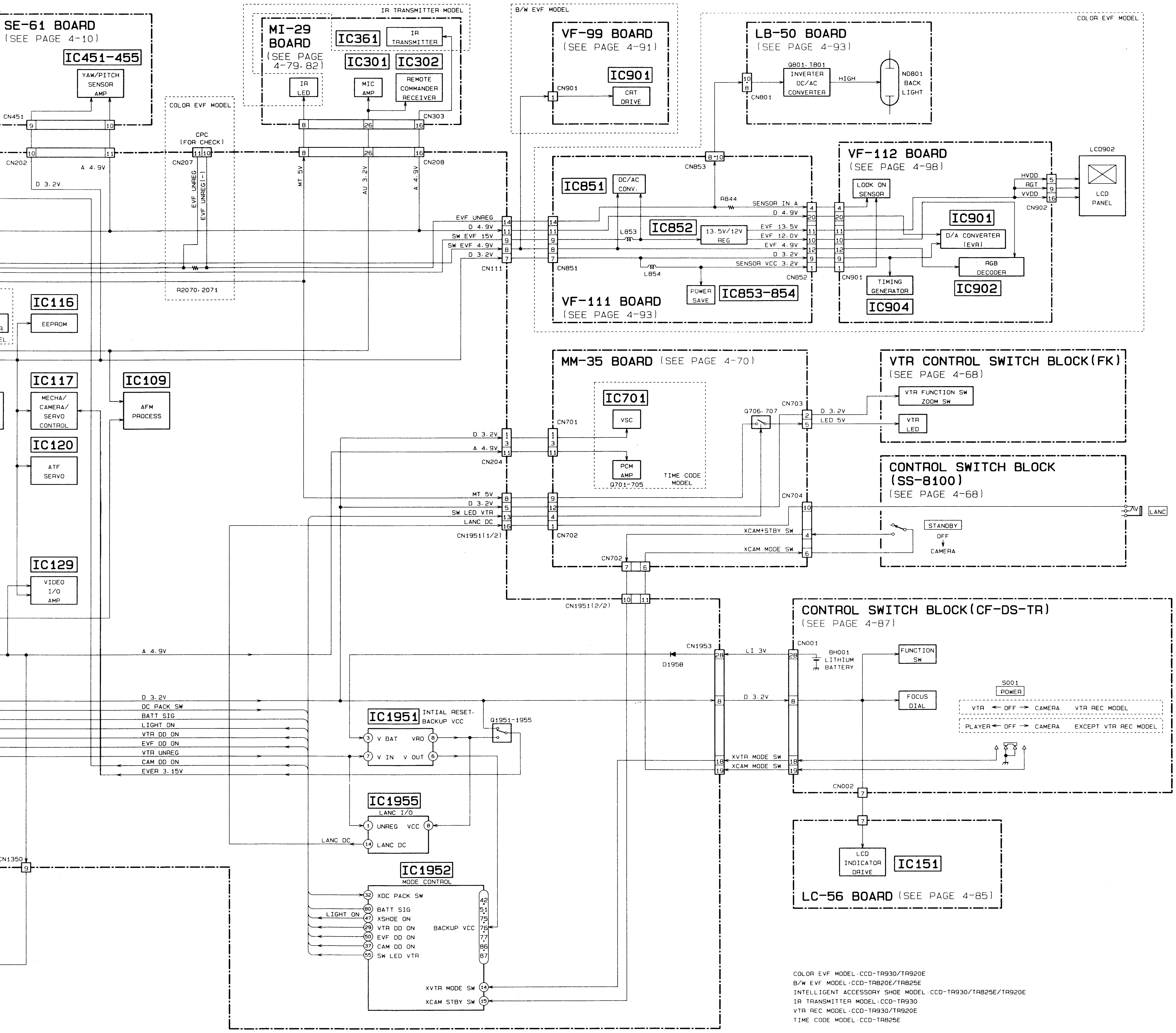

VF-112 BOARD
(SEE PAGE 4-98)
IC854 (1/2)
MONO MULTI
IC853 (1/2)
DRIVER
Q851
SENSOR IN A
SENSOR IN K
SENSOR OUT
SENSOR VCC 3.2V
D 3.2V
Q871
IC853 (1/2)
DC LEVEL CANCELLER
IC854 (1/2)
COMPARATOR
LOOK ON
CN852
CN901
D902
Q906
LOOK ON SENSOR
IC901
EVR (D/A CONVERTER)
VDD A
VDD
D 4.9V
LOOK ON
X NTSC
PIXEL
WIDE
BRIGHT
SUB BRT R
SUB BRT B
CONTRAST
SUB CONT R
SUB CONT B
GAMMA
VCO
INV CURRENT
LOOK LEVEL
ADJ
RGB BRT
SI
XSCK
XCS
SO
VCC D
NTSC
PX
BRT
VXO
HI SO
HI XSCK
XCS EVF D/A
HI SI
LOOK LEVEL
EVF R
EVF G
EVF B
EVF XVD
EVF XHD
EVF VD
VCO
EVR 4.9V
HDD
INV CUR RENT
EVF 13.5V
EVF 12.0V
EVF 4.9V
D 4.9V
D 3.2V
EVF 13.5V
EVF 12V
CN901 ⑮ REC/PB
CN901 ⑭ REC/PB
CN901 ⑯ REC/PB
1Vp-p
IC902
BRT
GAMMA
SUB CONT B
SUB CONT R
CONTRAST
SUB BRT R
SUB BRT B
RGB BRT
BRIGHT
GAMMA CONT
B GAIN
R GAIN
RGB GAIN
R/BRIGHT
B/BRIGHT
VCC1
VCC2
EVF 12V
EVF 4.9V
R IN
G IN
B IN
BF
RGB DRIVER
R OUT
G OUT
B OUT
FRP
SH B
SH R
SH G
IC902 ⑧ REC/PB
NTSC:10Vp-p PAL:7.4Vp-p
IC902 ⑩ REC/PB
NTSC:10Vp-p PAL:7.4Vp-p
IC902 ㉔ REC/PB
NTSC:5Vp-p PAL:3Vp-p
IC902 ⑥ REC/PB
NTSC:10Vp-p PAL:7.6Vp-p
IC904 ㊺ REC/PB
NTSC:3Vp-p PAL:2.2Vp-p
IC904 ㉟ REC/PB
IC904 ㉗ REC/PB
3Vp-p
2H
H
V
CN902
LCD902
LCD PANEL
R
G
B
LPF
Q901, 902
BUFFER
COM (5.5V)
LIQUID CRYSTAL DISPLAY
EN
HCK1
HCK2
HST
VCK2
VCK1
VST
CLR
H VDD
V VDD
RGT
EVF 13.5V
IC904
LCD TIMING GENERATOR
SLPL
XCLP
SYNC
D 3.2V
VDD
SLYT
WIDE
PLNT
SLCK
ADJ
WIDE
NTSC
PX
SH1
SH2
SH3
FRP
EN
HCK1
HCK2
HST1
VCK2
VCK1
VST1
CLR
RPO
CKI
CKO
LPF
D901
VXO
IC852
13.5V/12V REG
D 3.2V
EVF 15V
Vcc1
EVF 4.9V
IC851
DC/AC CONVERTER
Vcc1
Vcc2
IC851 ⑮ REC/PB
15Vp-p
PWM COMP
OUTPUT
CURRENT ERROR AMP
PROTECT DET
SCP
SCP COMP
TRIANGLE OSC
VREF (2.5V)
CT
SYNC
2.4Vp-p
IC851 ④ REC/PB
D852 (1/3)
D852 (1/3)
D852 (1/3)
D853
(SEE PAGE 4-93)
LB-50 BOARD
T801
ND801 BACK LIGHT
Q801 SWITCHING
CN801
CN853

3-9. B/W EVF BLOCK DIAGRAM


VF-99 BOARD (SEE PAGE 4-91)
(SEE PAGE 3-22)
MODE CONTROL (VC-190)
XTALLY LED
CAMERA/VIDEO (VC-190)
EVF Y
(SEE PAGE 3-6)
CN901
EVF 4.9V
D901 (TALLY)
1Vp-p
H
IC901 ⑪ REC
IC901
Q903 VIDEO AMP
Q904 VIDEO DRIVE
W901
G1
V901 PICTURE TUBE
T901 FBT
H
H
HV
EVF 4.9V
C909 H SIZE
Q902 H OUT
SOL901
D902 DUMPER
W901
G2
RV904 BRIGHT
2.5Vp-p
IC901 ⑬ REC
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
VCC
EVF 4.9V
RV903 V SIZE
CN902
DH2
DEFLECTION YOKE
H
V
EVF 4.9V
L903 HLC
DH1
CN902
DV2
DV1
09

3-10. POWER BLOCK DIAGRAM

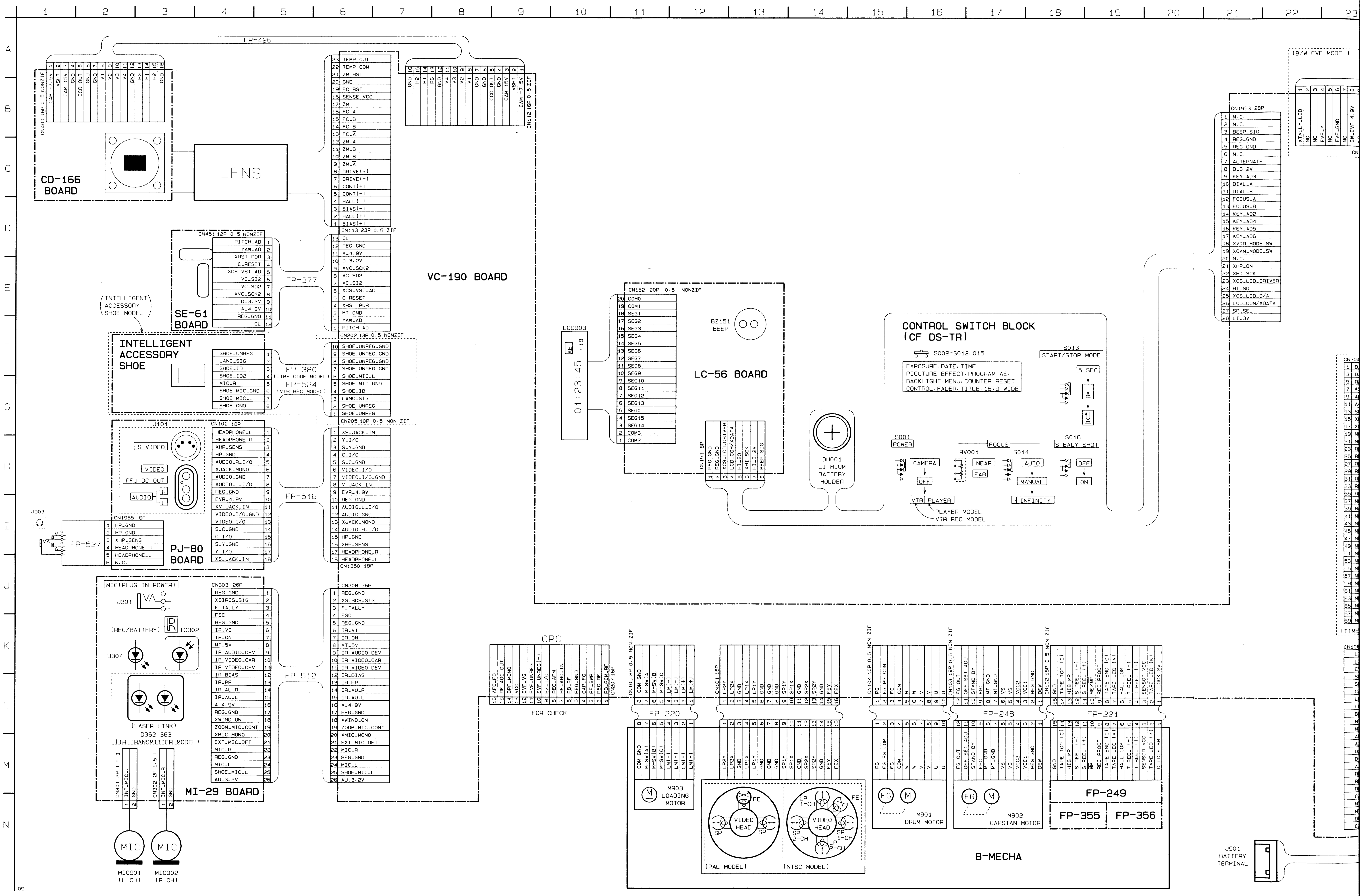

INTELLIGENT ACCESSORY SHOE MODEL
(SEE PAGE 4-62)
INTELLIGENT ACCESSORY SHOE
SHOE UNREG
VC-190 BOARD
(SEE PAGE 4-19, 22, 25, 29, 33, 36, 39, 43, 47, 52, 55, 60)
CN205
CD-166 BOARD
(SEE PAGE 4-8)
IC401
CCD IMAGER
CN401
Q1601-1604
CAM -7.5V
CAM 15V
CN112
SE-61 BOARD
(SEE PAGE 4-10)
IC451-455
YAW/PITCH SENSOR AMP
CN451
CN202
A 4.9V
D 3.2V
IRIS METER
DRIVE(+)
CN113
COLOR EVF MODEL
CPC (FOR CHECK)
CN207
EVF UNREG
EVF UNREG(-)
R2070, 2071
CAM DD ON
DD-95 BOARD (SEE PAGE 4-105)
J901 BATTERY TERMINAL
CN501
BATT(+)
BATT SW(+)
BATT SW(-)
BATT(-)
BATT SIG
INTELLIGENT ACCESSORY SHOE MODEL
PS504 LIGHT UNREG
PS503 MT UNREG
PS502 VTR UNREG1
PS501 VTR UNTEG2
Q519-521
CN502
CN106
DC PACK SW
BATT SIG
VTR UNREG
EVF UNREG
LIGHT UNREG
XLIGHT ON
MT 5V
A 3.2V
D 3.2V
AUDIO 3.2V
CAM -7.5V
CAM 15V
AUDIO 4.9V
RP 4.9V
A 4.9V
SW EVF 4.9V
SW EVF 15V
VTR DD ON
EVF DD ON
LCD 4.9V
L503
L501
L502
IC501 (1/2)
DC/DC CONVERTER
OUTPUT-1
FB1
VCC
CT
RT
OUTPUT-4
MOSGATE-4
FB4
OUTPUT VCC 13
OUTPUT VCC 24
COMP
OUTPUT-3
FB3
OUTPUT-2
FB2
STBY3
STBY
VREF
DRUM/CAPSTAN PWM DRIVE
OUTPUT VCC 56
Q503 SWITCHING
L506
D503
Q504 SWITCHING
L507
D504
Q505 SWITCHING
L509
L508
Q506 SWITCHING
T501
D505
Q509-512
-7.5V REG
L511
Q508
EMERGENCY DETECT
Q507 SWITCHING
L512
D506
L515
L513
L514
B/W EVF MODEL
COLOR EVF MODEL
Q515
Q517, 518
Q513
EMERGENCY DETECT
Q1514
Q501, 502
DRUM VS CAP VS SWITCHING
L516
L252
IC251, 253
IRIS DRIVE HALL AMP
IC252, 255
ZOOM/FOCUS DRIVE
IC104
CHARACTER GENERATOR
IC800
RGB DECODER D/A CONVERTER
COLOR EVF MODEL
IC116
EEPROM
IC202
TIMING GENERATOR
IC115
CAMERA Y/C PROCESS
IC114
ZOOM TBC CNR PROCESS
IC105
Y PROCESS
IC102
MOD/DEMOD EMPH/DEEMPH D/A CONV.
IC117
MECHA/CAMERA/SERVO CONTROL
IC109
AFM PROCESS
IC203
S/H, AGC, A/D CONVERTER
IC106
C PROCESS
IC103
A/D CONVERTER
IC120
ATF SERVO
IC108
D/A CONVERTER (EVR)
IC129
VIDEO I/O AMP
A 4.9V
D 3.2V
DC PACK SW
BATT SIG
LIGHT ON
VTR DD ON
EVF DD ON
VTR UNREG
CAM DD ON
EVER 3.15V
IC122
LOADING MOTOR DRIVE, SENSOR AMP
IC121
DRUM MOTOR DRIVE
IC101
REC/PB AMP
L1002
MT 5V
VTR UNREG
R1894
CN102
CN103
CN101
CN1350
SENSOR VCC
VCC2
VCC1
B-MECHA
(SEE PAGE 4-47)
T REEL, S REEL, SENSOR
H001
H002
CAPSTAN MOTOR
M902
VIDEO HEAD
CN102
EVER 4.9V
Q101, 102
CURRENT LIMITER
RFU DC OUT
J101(1/3)
RFU DC OUT
PJ-80 BOARD (SEE PAGE 4-63)

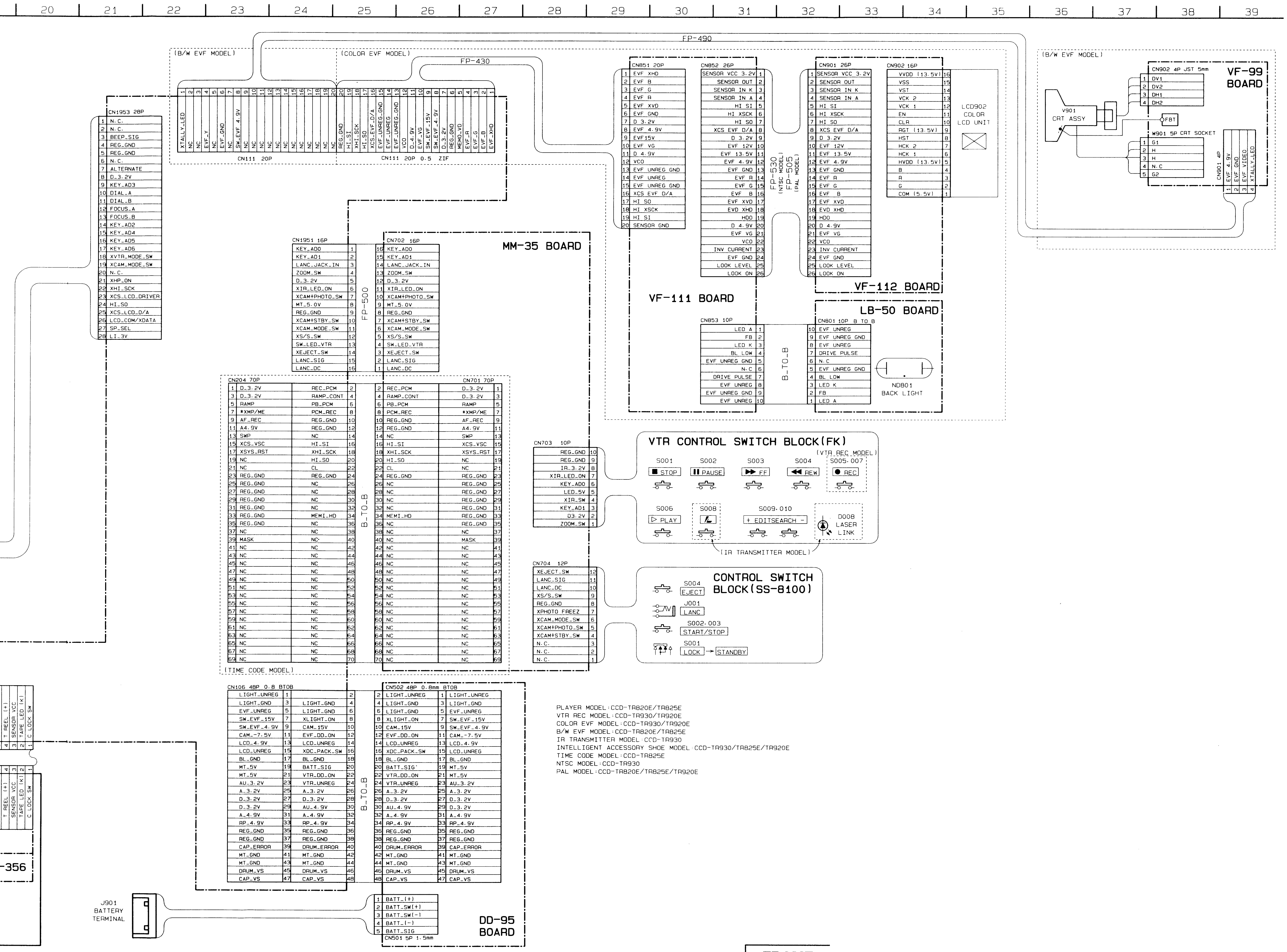

SE-61 BOARD
(SEE PAGE 4-10)
IC451-455
YAW/PITCH SENSOR AMP
CN451
CN202
A 4.9V
D 3.2V
IR TRANSMITTER MODEL
MI-29 BOARD
(SEE PAGE 4-79, 82)
IC361
IR TRANSMITTER
IC301
IC302
IR LED
MIC AMP
REMOTE COMMANDER RECEIVER
CN303
CN208
MT 5V
AU 3.2V
A 4.9V
COLOR EVF MODEL
CPC (FOR CHECK)
CN207
EVF UNREG
EVF UNREG(-)
R2070, 2071
B/W EVF MODEL
VF-99 BOARD
(SEE PAGE 4-91)
IC901
CN901
CRT DRIVE
COLOR EVF MODEL
LB-50 BOARD
(SEE PAGE 4-93)
Q801, T801
INVERTER DC/AC CONVERTER
HIGH
ND801
BACK LIGHT
CN801
CN853
R844
SENSOR IN A
IC851
DC/AC CONV.
L853
IC852
13.5V/12V REG
L854
POWER SAVE
IC853-854
CN851
CN852
VF-111 BOARD
(SEE PAGE 4-93)
EVF UNREG
D 4.9V
SW EVF 15V
SW EVF 4.9V
D 3.2V
CN111
EVF 13.5V
EVF 12.0V
EVF 4.9V
SENSOR VCC 3.2V
VF-112 BOARD
(SEE PAGE 4-98)
LOOK ON SENSOR
IC901
D/A CONVERTER (EVR)
RGB DECODER
IC902
TIMING GENERATOR
IC904
CN901
HVDD
RGT
VVDD
CN902
LCD902
LCD PANEL
IC116
EEPROM
IC117
MECHA/CAMERA/SERVO CONTROL
IC109
AFM PROCESS
IC120
ATF SERVO
IC129
VIDEO I/O AMP
MM-35 BOARD (SEE PAGE 4-70)
IC701
VSC
PCM AMP
Q701-705
TIME CODE MODEL
CN701
CN702
CN703
CN704
Q706, 707
D 3.2V
A 4.9V
CN204
MT 5V
SW LED VTR
LANC DC
CN1951(1/2)
LED 5V
VTR CONTROL SWITCH BLOCK(FK)
(SEE PAGE 4-68)
VTR FUNCTION SW ZOOM SW
VTR LED
CONTROL SWITCH BLOCK (SS-8100)
(SEE PAGE 4-68)
XCAM+STBY SW
XCAM MODE SW
STANDBY
OFF
CAMERA
LANC
CN1951(2/2)
CONTROL SWITCH BLOCK(CF-DS-TR)
(SEE PAGE 4-87)
CN1953
CN001
LI 3V
D1958
BH001 LITHIUM BATTERY
FUNCTION SW
FOCUS DIAL
S001 POWER
VTR ← OFF → CAMERA VTR REC MODEL
PLAYER ← OFF → CAMERA EXCEPT VTR REC MODEL
XVTR MODE SW
XCAM MODE SW
CN002
LCD INDICATOR DRIVE
IC151
LC-56 BOARD (SEE PAGE 4-85)
D 3.2V
DC PACK SW
BATT SIG
LIGHT ON
VTR DD ON
EVF DD ON
VTR UNREG
CAM DD ON
EVER 3.15V
IC1951
INTIAL RESET, BACKUP VCC
V BAT
VRO
V IN
V OUT
Q1951-1955
IC1955
LANC I/O
UNREG
VCC
LANC DC
CN1350
IC1952
MODE CONTROL
XDC PACK SW
BATT SIG
XSHOE ON
VTR DD ON
EVF DD ON
CAM DD ON
SW LED VTR
BACKUP VCC
XVTR MODE SW
XCAM STBY SW

COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E
IR TRANSMITTER MODEL:CCD-TR930
VTR REC MODEL:CCD-TR930/TR920E
TIME CODE MODEL:CCD-TR825E

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


FP-426
CD-166 BOARD
LENS
VC-190 BOARD
CN401 16P 0.5 NONZIF
CN112 16P 0.5 ZIF
CN113 23P 0.5 ZIF
CN451 12P 0.5 NONZIF
SE-61 BOARD
FP-377
(INTELLIGENT ACCESSORY SHOE MODEL)
INTELLIGENT ACCESSORY SHOE
FP-380 (TIME CODE MODEL)
FP-524 (VTR REC MODEL)
CN202 13P 0.5 NONZIF
CN205 10P 0.5 NON ZIF
J101
S VIDEO
VIDEO
RFU DC OUT
AUDIO
CN102 18P
FP-516
CN1350 18P
J903
FP-527
CN1965 6P
PJ-80 BOARD
MIC(PLUG IN POWER)
J301
(REC/BATTERY)
IC302
D304
(LASER LINK)
D362, 363
(IR TRANSMITTER MODEL)
CN303 26P
CN208 26P
FP-512
CN301 2P 1.5 I
CN302 2P 1.5 I
MI-29 BOARD
MIC
MIC
MIC901 (L CH)
MIC902 (R CH)
LCD903
01:23:45
CN152 20P 0.5 NONZIF
BZ151 BEEP
LC-56 BOARD
CN151 8P
BH001 LITHIUM BATTERY HOLDER
CONTROL SWITCH BLOCK (CF DS-TR)
S002-S012, 015
EXPOSURE, DATE, TIME, PICUTURE EFFECT, PROGRAM AE, BACKLIGHT, MENU, COUNTER RESET, CONTROL, FADER, TITLE, 16:9 WIDE
S013 START/STOP MODE
5 SEC
S001 POWER
CAMERA
OFF
VTR PLAYER
PLAYER MODEL
VTR REC MODEL
RV001
FOCUS
NEAR
FAR
S014
AUTO
MANUAL
INFINITY
S016 STEADY SHOT
OFF
ON
(B/W EVF MODEL)
CN1953 28P
CPC
CN207 16P
FOR CHECK
CN105 8P 0.5 NON ZIF
FP-220
CN101 16P
CN104 10P 0.5 NON ZIF
CN103 12P 0.5 NON ZIF
FP-248
CN102 15P 0.5 NON ZIF
FP-221
M903 LOADING MOTOR
VIDEO HEAD
FE
SP
1-CH
2-CH
LP
(PAL MODEL)
(NTSC MODEL)
FG
M
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
FP-249
FP-355
FP-356
B-MECHA
J901 BATTERY TERMINAL

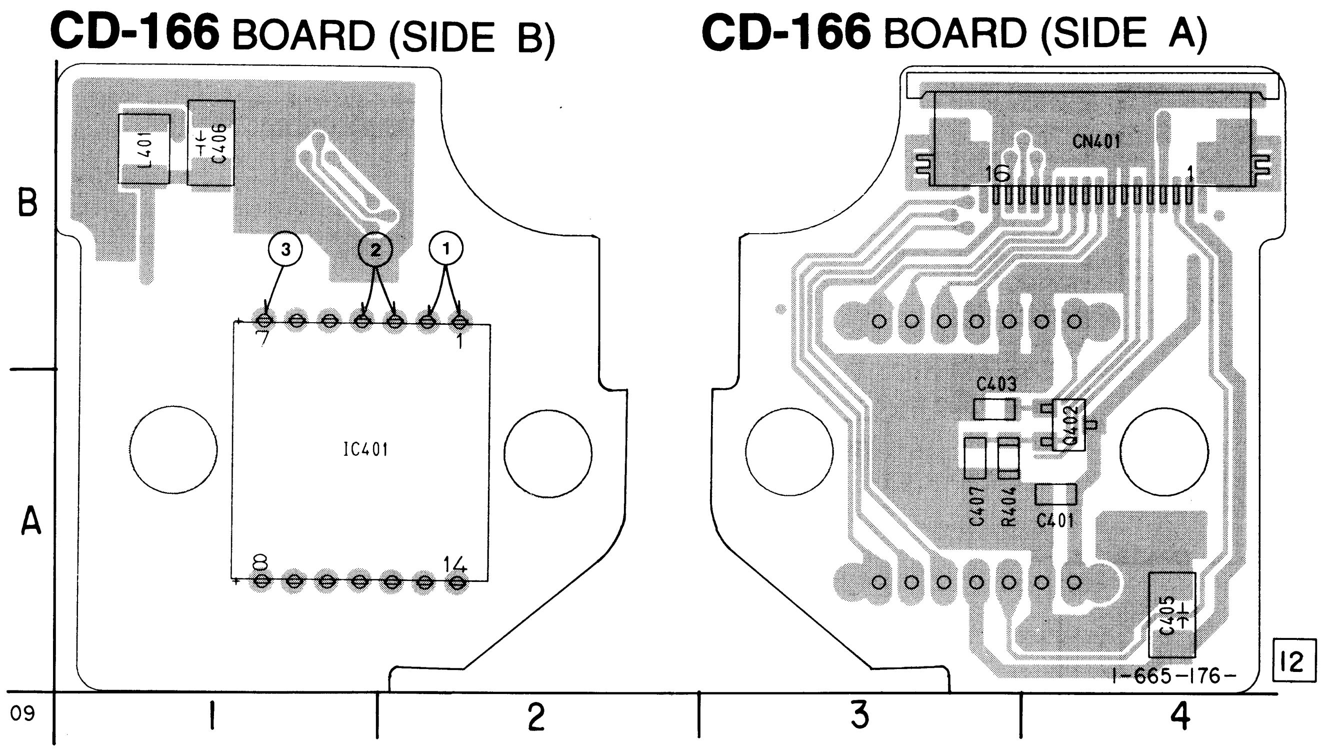

20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
FP-490
(B/W EVF MODEL)
(COLOR EVF MODEL)
FP-430
CN111 20P
CN111 20P 0.5 ZIF
CN1953 28P
N.C.
N.C.
BEEP_SIG
REG_GND
REG_GND
N.C.
ALTERNATE
D_3.2V
KEY_AD3
DIAL_A
DIAL_B
FOCUS_A
FOCUS_B
KEY_AD2
KEY_AD4
KEY_AD5
KEY_AD6
XVTR_MODE_SW
XCAM_MODE_SW
N.C.
XHP_ON
XHI_SCK
XCS_LCD_DRIVER
HI_SO
XCS_LCD_D/A
LCD_COM/XDATA
SP_SEL
LI_3V
MM-35 BOARD
CN1951 16P
CN702 16P
FP-500
KEY_AD0
KEY_AD1
LANC_JACK_IN
ZOOM_SW
D_3.2V
XIR_LED_ON
XCAM+PHOTO_SW
MT_5.0V
REG_GND
XCAM+STBY_SW
XCAM_MODE_SW
XS/S_SW
SW_LED_VTR
XEJECT_SW
LANC_SIG
LANC_DC
CN204 70P
CN701 70P
B_TO_B
(TIME CODE MODEL)
CN703 10P
CN704 12P
VF-111 BOARD
CN851 20P
CN852 26P
CN853 10P
FP-530 (NTSC MODEL)
FP-505 (PAL MODEL)
VF-112 BOARD
CN901 26P
CN902 16P
LCD902 COLOR LCD UNIT
LB-50 BOARD
CN801 10P B TO B
ND801 BACK LIGHT
(B/W EVF MODEL)
VF-99 BOARD
CN902 4P JST 5mm
V901 CRT ASSY
FBT
W901 5P CRT SOCKET
CN901 4P
EVF_4.9V
EVF_GND
EVF_VIDEO
XTALLY_LED
VTR CONTROL SWITCH BLOCK(FK)
(VTR REC MODEL)
S001 STOP
S002 PAUSE
S003 FF
S004 REW
S005, 007 REC
S006 PLAY
S008
S009, 010 + EDITSEARCH −
D008 LASER LINK
(IR TRANSMITTER MODEL)
CONTROL SWITCH BLOCK(SS-8100)
S004 EJECT
J001 LANC
S002, 003 START/STOP
S001 LOCK → STANDBY
CN106 48P 0.8 BTOB
CN502 48P 0.8mm BTOB
LIGHT_UNREG
LIGHT_GND
EVF_UNREG
SW_EVF_15V
SW_EVF_4.9V
CAM_-7.5V
LCD_4.9V
LCD_UNREG
BL_GND
MT_5V
AU_3.2V
A_3.2V
D_3.2V
A_4.9V
RP_4.9V
REG_GND
CAP_ERROR
MT_GND
DRUM_VS
CAP_VS
XLIGHT_ON
CAM_15V
EVF_DD_ON
XDC_PACK_SW
BATT_SIG
VTR_DD_ON
VTR_UNREG
AU_4.9V
DRUM_ERROR
J901 BATTERY TERMINAL
CN501 5P 1.5mm
BATT_(+)
BATT_SW(+)
BATT_SW(-)
BATT_(-)
BATT_SIG
DD-95 BOARD
T REEL (+)
SENSOR VCC
TAPE LED (K)
C LOCK SW
-356

PLAYER MODEL:CCD-TR820E/TR825E
VTR REC MODEL:CCD-TR930/TR920E
COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
IR TRANSMITTER MODEL:CCD-TR930
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E
TIME CODE MODEL:CCD-TR825E
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR820E/TR825E/TR920E

FRAME

CD-166 (CCD IMAGER) PRINTED WIRING BOARD

– Ref No. CD-166 BOARD: 3,000 series –

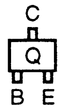

CD-166 BOARD (SIDE B)
CD-166 BOARD (SIDE A)
L401
C406
①
②
③
7
1
IC401
8
14
CN401
16
1
C403
Q402
C407
R404
C401
C405
1-665-176-
12
B
A
09
1
2
3
4

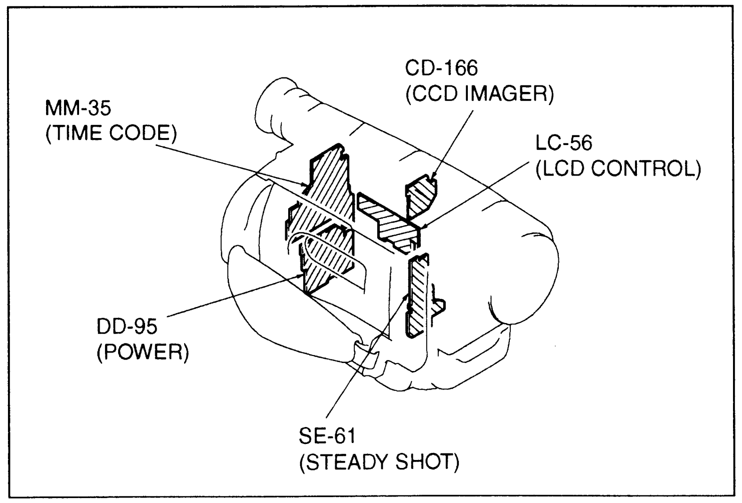
CD-166 BOARD	
C401	A-4
C403	A-3
C405	A-4
C406	B-1
C407	A-3
CN401	B-4
IC401	A-1
L401	B-1
Q402	A-4
R404	A-3

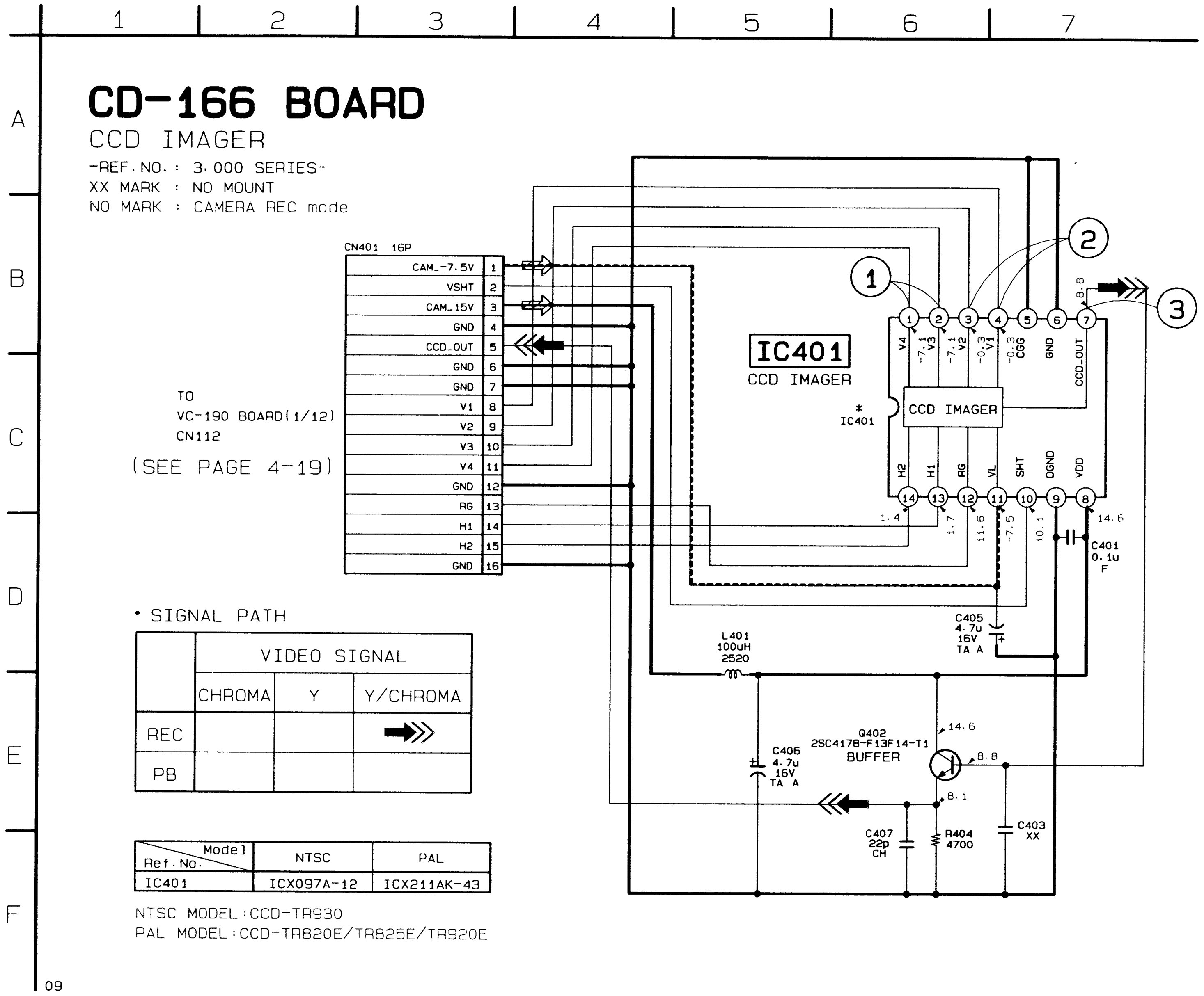
- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor




CD-166
(CCD IMAGER)
MM-35
(TIME CODE)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)


1
2
3
4
5
6
7
A
B
C
D
E
F
CD-166 BOARD
CCD IMAGER
-REF. NO. : 3,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
CN401 16P
CAM_-7.5V 1
VSHT 2
CAM_15V 3
GND 4
CCD_OUT 5
GND 6
GND 7
V1 8
V2 9
V3 10
V4 11
GND 12
RG 13
H1 14
H2 15
GND 16
TO
VC-190 BOARD(1/12)
CN112
(SEE PAGE 4-19)
IC401
CCD IMAGER
* IC401
CCD IMAGER
V4
-7.1 V3
-7.1 V2
-0.3 V1
-0.3 CGG
GND
CCD_OUT
8.8
H2
H1
RG
VL
SHT
DGND
VDD
1.4
1.7
11.6
-7.5
10.1
14.6
C401 0.1u F
C405 4.7u 16V TA A
L401 100uH 2520
Q402 2SC4178-F13F14-T1 BUFFER
14.6
8.8
8.1
C406 4.7u 16V TA A
C407 22p CH
R404 4700
C403 XX
①
②
③
09

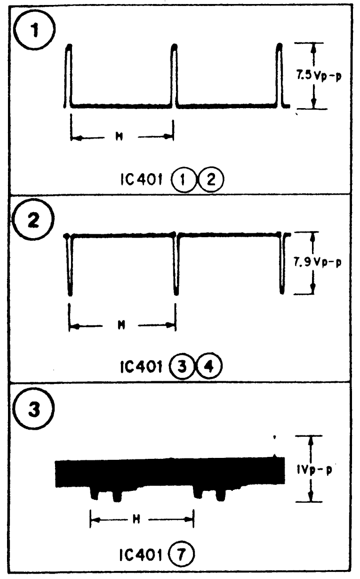
• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡≫
PB			

Model / Ref. No.	NTSC	PAL
IC401	ICX097A-12	ICX211AK-43

NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

CD-166 BOARD



Note on the CCD imager replacement

- The CCD imager is not mounted for the already mounted CD-166 board supplied as the repair parts.
  When replacing the CD-166 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

• For printed wiring boards.

- ▨ : Pattern from the side which enable seeing.
  (The other layer's patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- Through hole is omitted.

• For schematic diagrams.

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/16W unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50 V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : panel designation.
- Δ : internal component.
- The constant such as resistor, capacitors and etc. shown with XX means not used.
- ▭ : adjustment for repeair.
- ▬ : B+ Line
- ▪▪▪▪ : B– Line
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

The components identified by mark ⚠or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

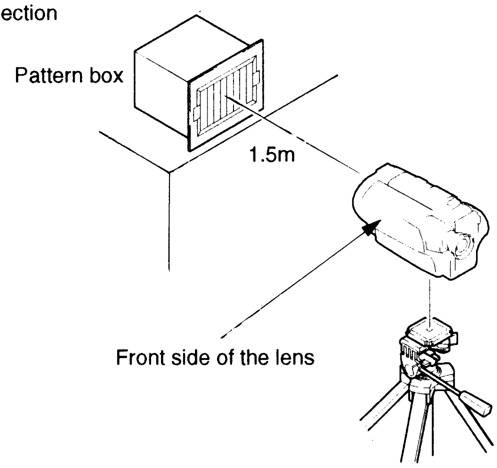
When indicating parts by reference number, please include the board name.

Refer to page 2 as for "Table for difference of functions" of models and classification.

• Measuring conditions voltage value and waveform. (CAMERA block)

- The object is color bar chart of pattern box.
- Voltages and dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltages variations may be noted due to normal production tolerances.

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

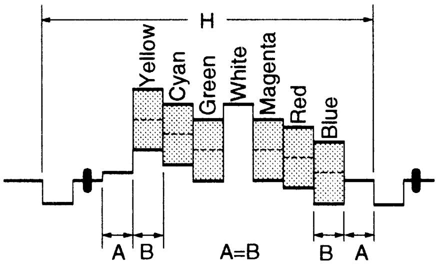


Fig. a (Video output terminal output waveform)

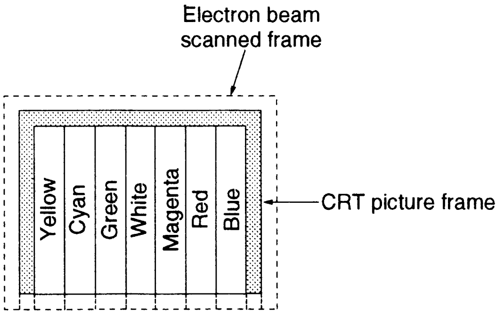


Fig. b (Picture on monitor TV)

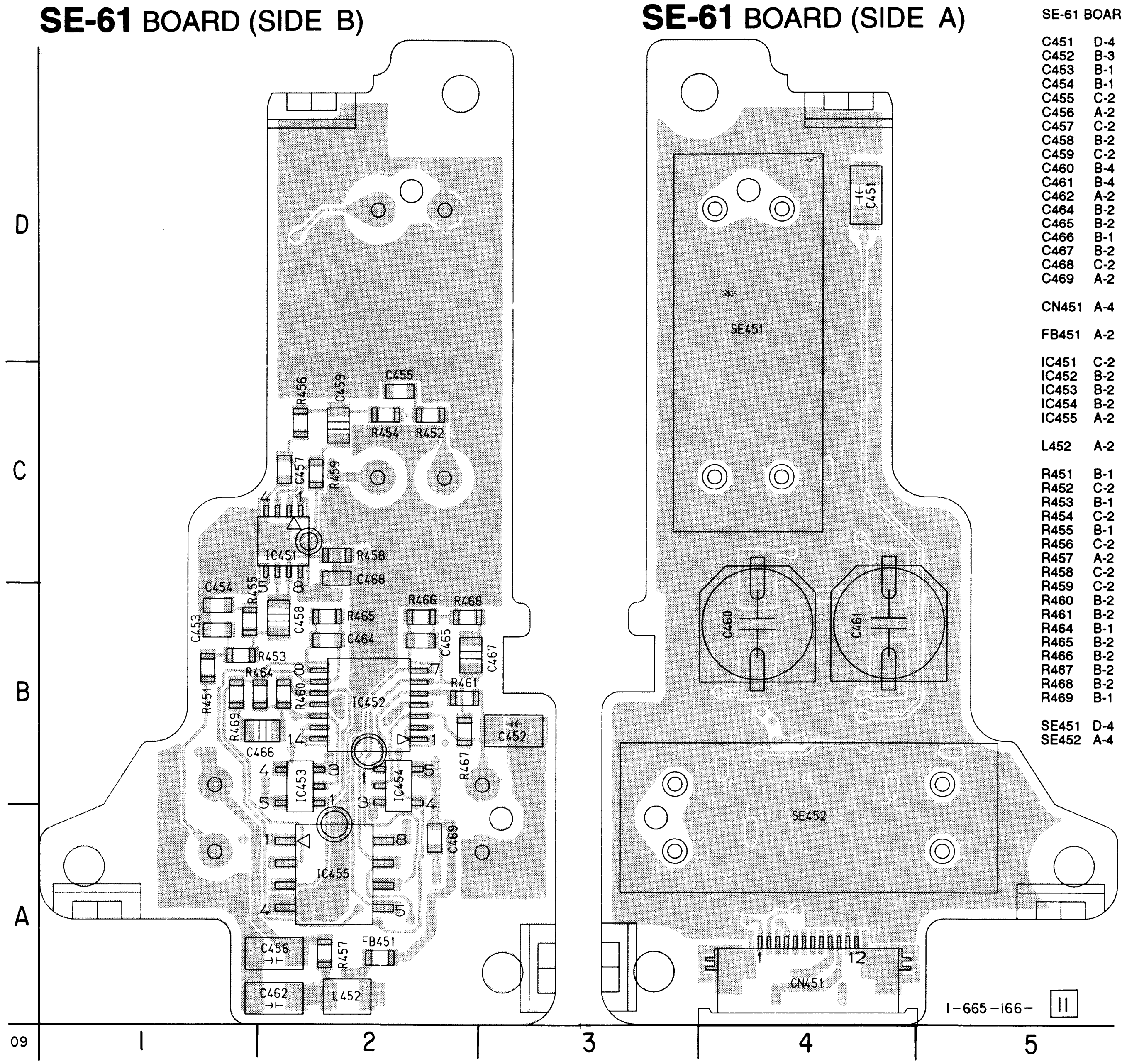
(REC/PB mode)

- Voltages and dc between ground and measurement points
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltages variations may be noted due to normal production tolerances.

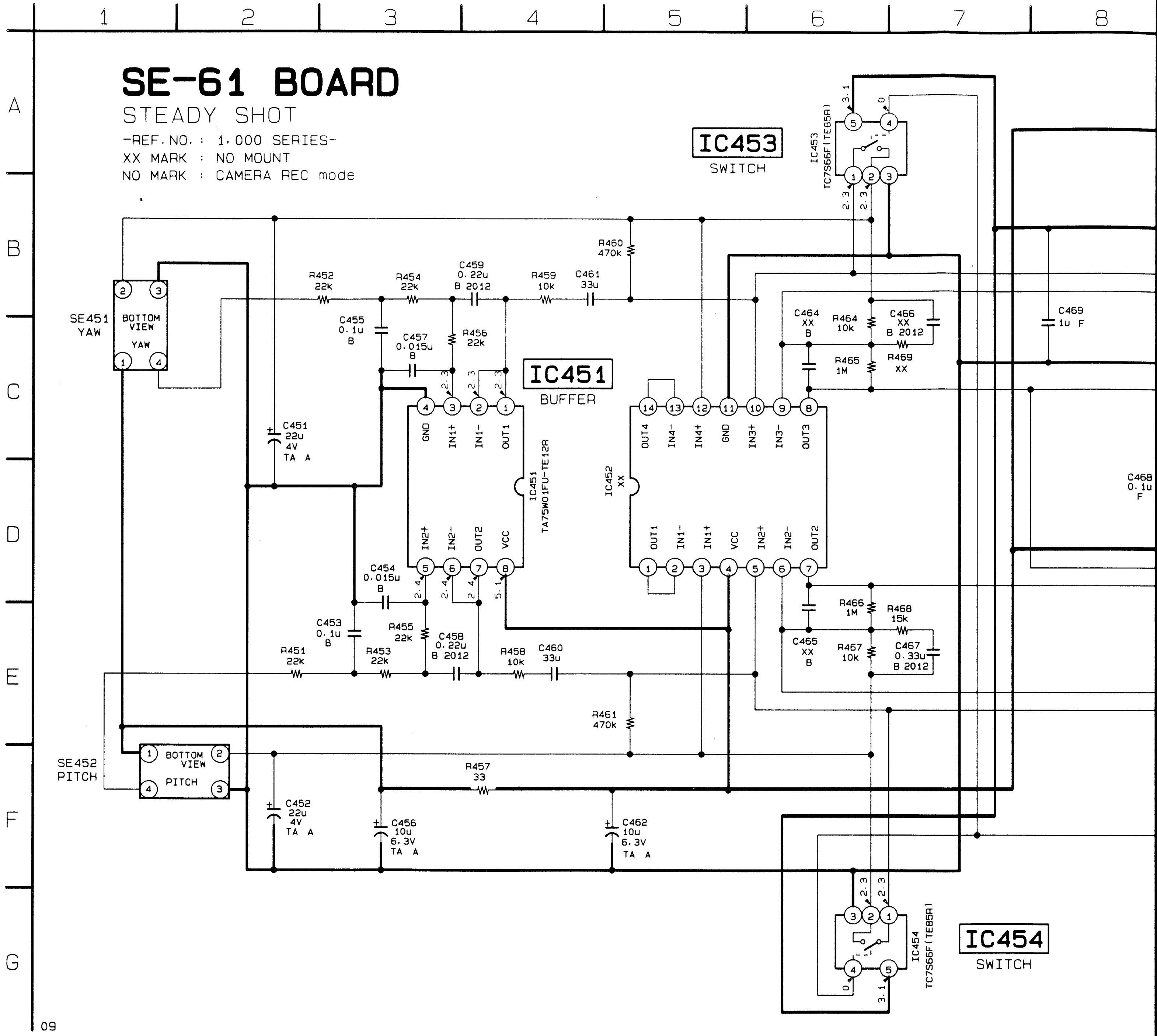
Note : Refer "3-1-4. Connecting the equipments" and "3-1-6. How to set the REC Mode" in VIDEO SECTION ADJUSTMENT. (See page 5-41,43)

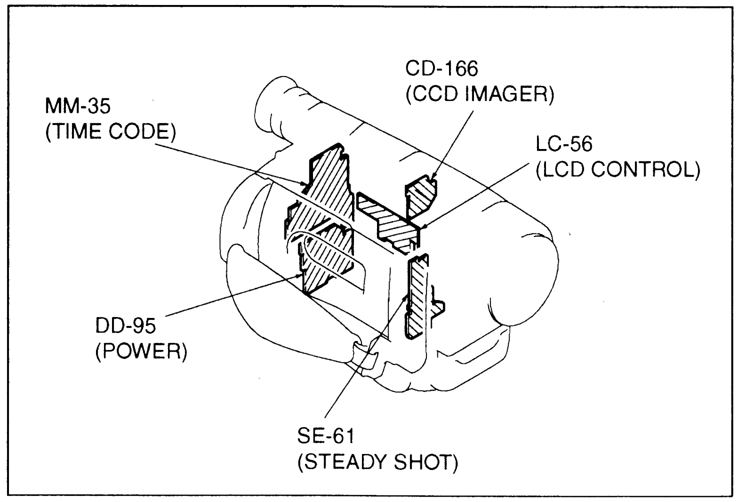
SE-61 (STEADY SHOT) PRINTED WIRING BOARD

– Ref No. SE-61 BOARD: 1,000 series –


SE-61 BOARD (SIDE B)
SE-61 BOARD (SIDE A)
D
C
B
A
09
1
2
3
4
5
SE451
SE452
C451
C452
C455
C456
C460
C461
C462
C466
IC451
IC452
IC453
IC454
IC455
R452
R454
R456
R458
R466
R468
FB451
L452
CN451
1-665-166- 11

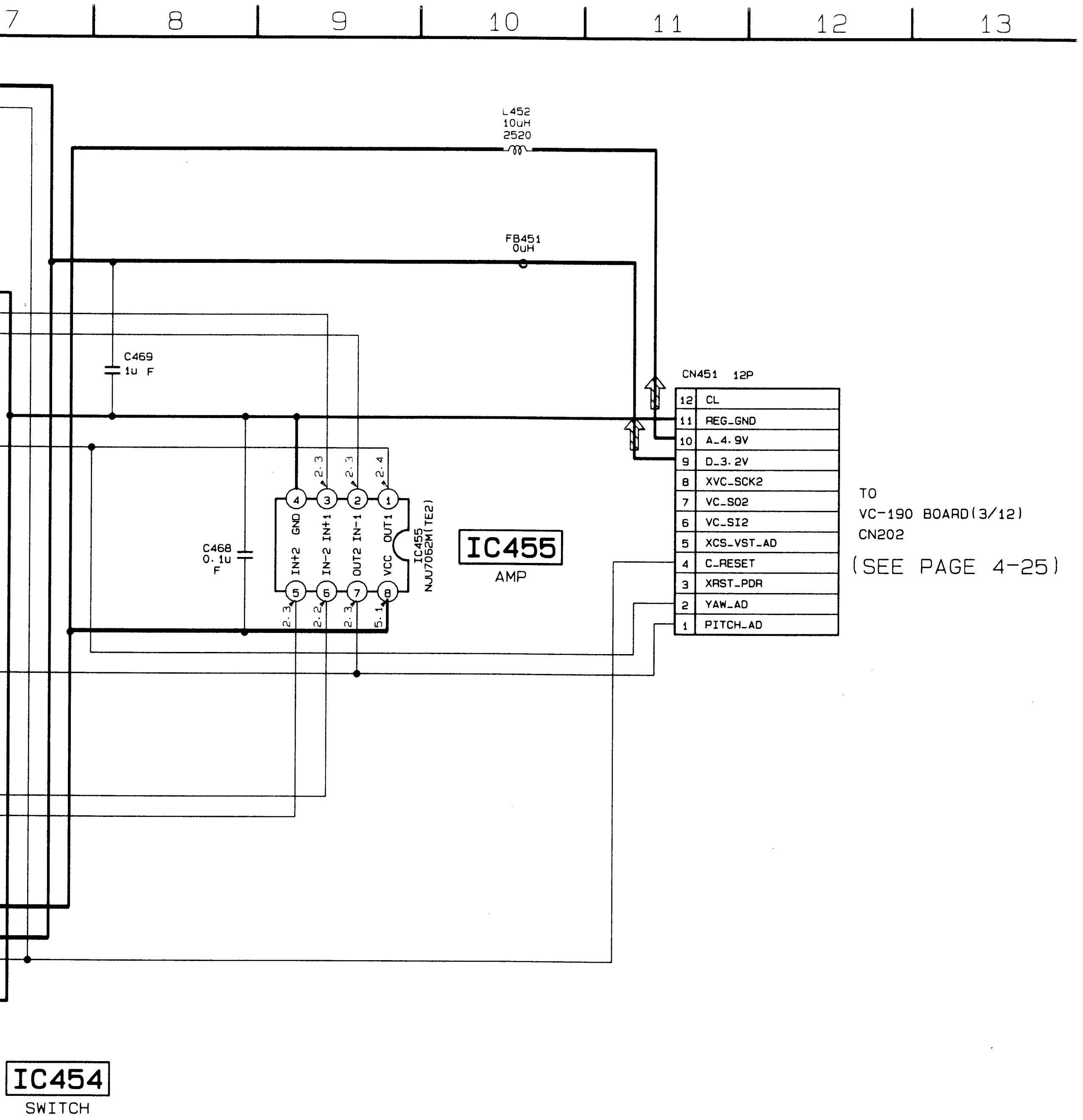
SE-61 BOARD	
C451	D-4
C452	B-3
C453	B-1
C454	B-1
C455	C-2
C456	A-2
C457	C-2
C458	B-2
C459	C-2
C460	B-4
C461	B-4
C462	A-2
C464	B-2
C465	B-2
C466	B-1
C467	B-2
C468	C-2
C469	A-2
CN451	A-4
FB451	A-2
IC451	C-2
IC452	B-2
IC453	B-2
IC454	B-2
IC455	A-2
L452	A-2
R451	B-1
R452	C-2
R453	B-1
R454	C-2
R455	B-1
R456	C-2
R457	A-2
R458	C-2
R459	C-2
R460	B-2
R461	B-2
R464	B-1
R465	B-2
R466	B-2
R467	B-2
R468	B-2
R469	B-1
SE451	D-4
SE452	A-4


SE-61 BOARD
STEADY SHOT
-REF.NO.: 1.000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
IC453
SWITCH
IC453 TC7S66F(TE85R)
IC451
BUFFER
IC451 TA75W01FU-TE12R
IC452 XX
IC454
SWITCH
IC454 TC7S66F(TE85R)
SE451 YAW
BOTTOM VIEW
YAW
SE452 PITCH
BOTTOM VIEW
PITCH
R452 22k
R454 22k
C459 0.22u B 2012
R459 10k
C461 33u
R460 470k
C455 0.1u B
C457 0.015u B
R456 22k
C451 22u 4V TA A
C454 0.015u B
C453 0.1u B
R455 22k
C458 0.22u B 2012
R451 22k
R453 22k
R458 10k
C460 33u
R461 470k
R457 33
C452 22u 4V TA A
C456 10u 6.3V TA A
C462 10u 6.3V TA A
C464 XX B
R464 10k
C466 XX B 2012
R465 1M
R469 XX
R466 1M
R468 15k
C465 XX B
R467 10k
C467 0.33u B 2012
C469 1u F
C468 0.1u F
GND
IN1+
IN1-
OUT1
IN2+
IN2-
OUT2
VCC
OUT4
IN4-
IN4+
IN3+
IN3-
OUT3
A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
09


CD-166
(CCD IMAGER)
MM-35
(TIME CODE)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.


7
8
9
10
11
12
13
L452
10uH
2520
FB451
0uH
C469
1u F
C468
0.1u
F
2.3
2.3
2.4
4
3
2
1
GND
IN+1
IN-1
OUT1
IN+2
IN-2
OUT2
VCC
5
6
7
8
2.3
2.2
2.3
5.1
IC455
NJU7062M(TE2)
IC455
AMP
CN451 12P
12 CL
11 REG_GND
10 A_4.9V
9 D_3.2V
8 XVC_SCK2
7 VC_SO2
6 VC_SI2
5 XCS_VST_AD
4 C_RESET
3 XRST_PDR
2 YAW_AD
1 PITCH_AD
TO
VC-190 BOARD(3/12)
CN202
(SEE PAGE 4-25)
IC454
SWITCH

VC-190 BOARD

C251	F-12
C252	G-6
C253	G-6
C254	F-6
C255	G-6
C256	G-6
C258	F-7
C259	F-7
C260	F-7
C261	G-6
C262	F-7
C263	G-8
C266	G-7
C267	F-13
C268	G-6
C269	F-11
C271	F-12
C272	G-11
C274	G-6
C276	F-6
C1001	B-5
C1002	B-5
C1005	A-13
C1006	B-4
C1007	A-14
C1008	B-6
C1009	A-14
C1010	B-6
C1011	A-13
C1012	B-4
C1013	B-5
C1014	B-4
C1015	B-5
C1016	C-4
C1017	B-14
C1018	B-13
C1019	B-6
C1020	B-5
C1021	A-5
C1022	A-5
C1023	A-6
C1024	A-6
C1025	B-5
C1026	C-4
C1027	A-14
C1028	A-13
C1029	B-6
C1030	B-14
C1031	B-13
C1033	A-13
C1034	C-13
C1035	C-13
C1036	B-14
C1037	B-13
C1038	B-14
C1039	B-15
C1040	B-14
C1041	B-13
C1042	B-14
C1043	B-13
C1044	B-13
C1045	B-14
C1046	B-13
C1047	B-6
C1048	B-14
C1049	B-6
C1050	C-15
C1051	B-14
C1052	B-14
C1053	B-13
C1054	C-14
C1056	C-14
C1058	C-5
C1059	C-13
C1060	C-14
C1061	B-5
C1062	B-5
C1063	C-13
C1064	B-5
C1065	B-6
C1068	C-13
C1070	C-5
C1071	B-6
C1073	C-6
C1074	C-5
C1076	C-5
C1077	C-6
C1078	C-6
C1080	C-5
C1081	C-6
C1083	C-13
C1084	C-6
C1085	D-6
C1086	C-13
C1087	D-14
C1088	C-5
C1089	D-5
C1090*	C-14
C1091	C-5
C1092	C-5
C1093	C-5
C1094	D-14
C1095	D-14
C1096	C-4
C1097	C-14
C1140	C-6
C1141	C-7
C1144	C-13
C1145	C-6
C1147	C-5
C1149	B-6
C1150	D-13
C1151	C-6
C1152	B-4
C1153	C-4
C1154	C-4
C1155	C-4
C1156	C-4
C1157	C-16
C1158	C-2
C1160	B-3
C1161	B-3
C1162	A-3
C1163	A-3
C1164	A-3
C1165	B-2
C1166	A-3
C1167	A-3
C1168	A-4
C1170	D-4
C1171	C-4
C1172	C-3
C1173	C-2
C1174	B-3
C1201	E-4
C1202	E-4
C1203	D-4
C1204	D-4
C1205	E-4
C1206	E-4
C1207	E-4
C1208	D-4
C1209	E-5
C1210	E-2
C1212	E-4
C1213	E-4
C1215	D-4
C1216	D-4
C1217	D-5
C1218	E-5
C1219	E-4
C1220	E-4
C1222	B-1
C1223	D-16
C1224	D-16
C1227	E-14
C1228	E-15
C1229	E-14
C1230	D-14
C1231	D-15
C1232	E-15
C1233	D-15
C1234	E-15
C1236	E-15
C1237	E-15
C1240	D-14
C1250	E-15
C1280	E-5
C1282	D-16
C1283	E-5
C1284	B-1
C1285	E-16
C1290	E-4
C1301	D-14
C1302	D-14
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C1309	F-12
C1310	F-13
C1311	F-13
C1312	F-12
C1313	F-13
C1314	F-6
C1315	E-6
C1317	E-13
C1318	F-12
C1319	F-6
C1320	F-12
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C1322	E-6
C1323	E-6
C1324	E-13
C1325	D-13
C1326	D-13
C1327	D-13
C1328	D-13
C1330	D-7
C1331	D-12
C1332	D-12
C1333	C-12
C1334	D-13
C1335	E-7
C1336	E-7
C1337	E-7
C1338	E-7
C1339	E-12
C1340	E-12
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C1343	F-7
C1344	E-7
C1348	E-7
C1349	E-7
C1350	C-15
C1351	F-8
C1352	C-15
C1353	B-15
C1370	D-13
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C1403	C-8
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C1409	C-7
C1410	D-7
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C1417	E-7
C1422	D-12
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C1424	E-7
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C1426	E-7
C1427	E-8
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C1430	E-8
C1431	F-8
C1432	F-8
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C1434	D-8
C1435	D-9
C1436	D-9
C1437	D-9
C1439	C-9
C1441	D-9
C1444	E-8
C1463	E-7
C1466	D-7
C1468	C-8
C1471	C-8
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C1476	E-8
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C1488	D-11
C1489	D-11
C1490	C-9
C1491	E-8
C1492	D-7
C1493	C-11
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C1602	F-6
C1604	E-6
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C1608	G-5
C1610	F-14
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C1619	F-14
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C1621	F-4
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C1624	F-14
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C1629	F-5
C1630	E-5
C1631	F-5
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C1639	E-14
C1640	E-14
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C1643	F-14
C1644	F-14
C1645	F-14
C1646	F-14
C1647	F-15
C1701	F-3
C1702	D-18
C1703	F-16
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C1758	E-18
C1760	G-2
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C1762	G-18
C1763	G-2
C1764	G-2
C1765	G-1
C1766	E-1
C1767	F-1
C1768	F-1
C1769	F-1
C1770	F-1
C1771	E-2
C1772	E-2
C1773	F-1
C1774	F-2
C1775	F-2
C1776	F-2
C1777	F-2
C1778	F-2
C1779	G-1
C1780	F-18
C1851	A-15
C1852	A-16
C1853	B-16
C1854	B-4
C1855	B-16
C1856	B-4
C1857	B-4
C1858	B-16
C1859	B-16
C1860	B-4
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C1862	B-15
C1863	B-15
C1864	B-4
C1865	B-15
C1866	B-15
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C1872	A-2
C1873	A-2
C1874	A-17
C1875	A-2
C1876	A-17
C1877	A-17
C1878	A-17
C1879	A-18
C1880	A-2
C1882	A-18
C1884	A-18
C1886	B-15
C1887	A-1
C1888	A-16
C1951	C-9
C1952	B-8
C1953	B-8
C1954	A-12
C1955	B-9
C1956	B-8
C1957	C-11
C1958	B-11
C1959	C-12
C1960	A-12
C1961	C-11
C1963	A-8
C1964	A-7
C1965	A-12
C1967	A-7
C1968	A-12
C1971	A-7
C1974	A-12
C1976	C-11
C1978	B-10
C1980	B-10
C1981	B-11
C1982	B-11
C1986	B-7
C1987	B-8
C1989	B-8
C1990	A-8
C1991	A-12
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C2052	D-1
C2054	D-2
C2055	D-2
C2056	D-2
C2057	E-2
CN101	A-14
CN102	A-2
CN103	A-3
CN104	A-15
CN105	A-7
CN106	A-18
CN111	C-17
CN112	F-13
CN113	G-13
CN202	D-9
CN204	C-18
CN205	G-11
CN207	A-10
CN208	B-9
CN1350	C-10
CN1350	D-10
CN1950	B-17
CN1951	E-18
CN1953	A-11
D1001	D-15
D1036	E-7
D1201	E-4
D1202	D-4
D1305	E-7
D1350	B-2
D1351	B-2
D1352	B-2
D1353	E-10
D1601	E-5
D1602	G-4
D1951	C-9
D1952	B-8
D1953	A-8
D1954	A-8
D1955	B-8
D1956	B-12
D1957	B-8
D1958	A-7
D2051	C-2
D2052	C-2
FB251	F-7
FB1151	D-4
FB1601	F-5
FB1602	G-5
FB1603	F-4
FB1604	F-4
FB1605	F-4
FB1701	E-18
FB1702	G-4
IC101	B-14
IC102	C-3
IC103	B-3
IC104	C-1
IC105	E-3
IC106	E-15
IC108	E-6
IC109	D-8
IC110	C-16
IC114	D-17
IC115	F-3
IC116	G-2
IC117	F-17
IC118	E-2
IC119	E-2
IC120	F-1
IC121	B-15
IC122	A-17
IC129	E-12
IC130	D-16
IC202	F-5
IC203	F-15
IC251	F-13
IC252	G-7
IC253	F-12
IC255	F-8
IC800	D-1
IC1951	B-8
IC1952	B-11
IC1995	B-7
L252	F-7
L253	F-7
L1002	A-13
L1003	B-5
L1004	C-4
L1005	B-13
L1006	C-13
L1007	C-5
L1008	C-5
L1009	C-6
L1010	C-6
L1011	C-6
L1012	D-13
L1013	D-6
L1014	D-13
L1015	D-6
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L1019	C-5
L1020	D-15
L1141	D-5
L1151	B-4
L1154	B-2
L1201	E-14
L1202	D-14
L1203	E-5
L1204	E-4
L1206	B-1
L1207	C-17
L1209	E-14
L1220	E-5
L1301	D-14
L1303	E-14
L1305	F-7
L1306	E-7
L1307	E-7
L1308	F-7
L1310	E-14
L1603	G-15
L1604	F-14
L1751	G-15
L1752	G-2
L1753	G-1
L1754	E-1
L1870	B-17
L1951	B-8
L2051	E-1
Q251	G-6
Q252	F-11
Q253	G-12
Q1001	A-4
Q1002	B-5
Q1003	C-4
Q1004	A-5
Q1005	A-5
Q1006	A-6
Q1007	A-6
Q1008	C-4
Q1009	A-6
Q1010	A-5
Q1011	A-5
Q1012	A-6
Q1013	B-5
Q1014	C-5
Q1015	B-5
Q1016	B-5
Q1018	C-15
Q1025	D-5
Q1026	B-6
Q1028	C-13
Q1029	D-6
Q1030	D-13
Q1033	D-14
Q1034	C-6
Q1036	C-6
Q1037	D-5
Q1038	C-13
Q1039	C-14
Q1040	C-14
Q1041	D-14
Q1043	D-15
Q1044	C-5
Q1045	C-14
Q1100	C-13
Q1135	D-14
Q1136	C-5
Q1138	C-5
Q1139	C-6
Q1140	C-14
Q1141	B-6
Q1150	C-13
Q1151	A-3
Q1201	E-5
Q1202	D-5
Q1203	E-4
Q1220	E-5
Q1221	D-17
Q1223	D-4
Q1224	D-4
Q1305	F-7
Q1350	E-7
Q1351	C-15
Q1352	F-11
Q1353	C-15
Q1354	E-11
Q1355	F-11
Q1356	D-15
Q1357	C-15
Q1485	D-11
Q1486	C-10
Q1487	C-11
Q1488	C-11
Q1489	D-12
Q1490	D-12
Q1491	D-11
Q1492	D-11
Q1493	D-11
Q1494	D-11
Q1601	F-14
Q1602	F-13
Q1603	F-14
Q1604	F-13
Q1605	E-14
Q1751	E-1
Q1851	A-1
Q1852	B-1
Q1853	A-2
Q1854	A-1
Q1951	B-10
Q1952	C-9
Q1953	C-9
Q1954	B-9
Q1955	B-10
Q1956	B-8
Q1959	A-8
Q1963	B-9
Q2051	D-2
Q2052	D-2
Q2053	E-2
R251	G-6
R252	G-6
R253	F-13
R254	G-6
R255	G-6
R256	G-6
R257	G-6
R258	G-6
R259	F-6
R260	F-13
R261	F-11
R262	F-11
R263	F-6
R264	F-6
R265	F-13
R266	F-11
R267	G-6
R269	G-12
R270	G-11
R271	F-13
R272	F-6
R273	G-11
R275	G-12
R293	D-9
R294	C-9
R295	D-9
R296	D-10
R297	D-10
R298	D-9
R299	C-9
R300	C-9
R301	C-9
R302	D-10
R303	D-10
R705	G-17
R706	G-17
R1001	A-5
R1002	B-4
R1003	B-4
R1004	B-5
R1005	B-5
R1006	B-4
R1007	B-4
R1009	C-5
R1010	B-5
R1011	A-5
R1012	A-5
R1013	A-6
R1014	C-5
R1015	C-5
R1016	A-5
R1017	A-5
R1018	A-6
R1019	A-6
R1020	B-6
R1022	B-6
R1023	B-14
R1024	B-13
R1025	B-6
R1027	B-6
R1028	B-5
R1030	B-5
R1031	B-5
R1033	B-5
R1034	B-14
R1035	B-13
R1037	B-5
R1039	B-6
R1040	B-15
R1041	B-14
R1042	B-14
R1043	B-14
R1044	B-5
R1045	C-14
R1046	B-14
R1047	B-14
R1048	C-14
R1051	C-14
R1052	B-13
R1053	B-13
R1054	C-14
R1057	C-14
R1058	B-6
R1059	C-6
R1062	B-6
R1076	C-13
R1081	C-5
R1082	C-6
R1083	B-6
R1084	C-4
R1085	D-4
R1086	C-5
R1087	C-6
R1088	C-6
R1089	C-5
R1090	C-6
R1097	C-6
R1098	C-6
R1100	C-6
R1101	C-13
R1102	D-13
R1103	C-13
R1104	D-13
R1105	C-13
R1106	C-6
R1107	D-6
R1110	C-5
R1111	D-6
R1112	D-14
R1114	C-5
R1115	D-14
R1116	D-14
R1117	D-14
R1118	C-6
R1119	C-13
R1120	C-5
R1121	D-5
R1122	C-6
R1123	C-5
R1124	D-5
R1125	C-14
R1128	C-14
R1129	C-5
R1131	D-14
R1134	C-14
R1135	D-14
R1136	C-5
R1137	C-15
R1138	C-15
R1140	C-14
R1142	D-13
R1143	C-14
R1144	C-13
R1145	B-5
R1146	C-13
R1147	D-13
R1148	B-6
R1149	B-6
R1150	B-6
R1151	C-4
R1152	C-4
R1153	C-4
R1154	C-4
R1155	C-4
R1156	C-4
R1157	C-4
R1158	B-3
R1159	B-3
R1160	A-4
R1161	A-4
R1162	A-4
R1163	A-4
R1164	C-2
R1165	D-4
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R1181	A-3
R1213	E-5
R1214	E-5
R1215	E-5
R1216	E-5
R1217	E-5
R1218	E-5
R1219	D-4
R1221	E-4
R1222	D-4
R1223	D-4
R1225	E-4
R1227	E-4
R1228	D-5
R1230	E-4
R1231	E-4
R1232	D-4
R1233	D-4
R1234	D-4
R1234	D-4
R1236	C-2
R1237	B-2
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R1239	C-2
R1240	B-2
R1241	B-1
R1242	B-1
R1246	E-15
R1247	E-15
R1248	E-14
R1249	D-15
R1250	E-14
R1251	E-14
R1252	E-14
R1253	D-14
R1254	D-14
R1255	D-14
R1256	E-14
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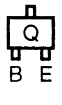
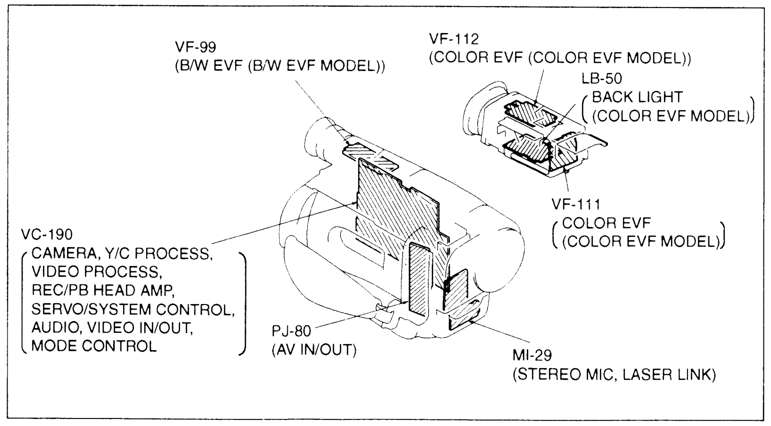
R1281	E-5
R1283	D-16
R1284	D-16
R1285	D-16
R1287	E-16
R1289	E-4
R1290	D-5
R1292	D-5
R1293	B-1
R1294	D-4
R1295	D-4
R1296	D-4
R1297	E-14
R1298	E-4
R1299	E-4
R1307	F-6
R1308	E-6
R1312	E-7
R1313	D-7
R1314	D-13
R1315	D-7
R1316	D-13
R1321	E-6
R1322	E-6
R1323	E-6
R1324	E-6
R1330	E-7
R1331	E-6
R1332	E-6
R1335	F-11
R1350	C-15
R1351	C-15
R1352	F-11
R1353	C-15
R1354	B-15
R1356	C-15
R1357	F-11
R1358	C-15
R1359	D-15
R1360	C-15
R1361	C-15
R1362	E-11
R1363	E-11
R1364	C-15
R1365	C-15
R1366	E-11
R1367	E-11
R1368	E-11
R1369	E-11
R1370	E-12
R1372	E-12
R1374	B-2
R1377	B-1
R1380	B-1
R1381	B-2
R1383	B-1
R1390	B-16
R1391	A-10
R1402	C-8
R1403	C-11
R1404	D-7
R1406	D-7
R1407	D-7
R1408	D-7
R1409	D-7
R1410	E-8
R1418	D-11
R1419	E-8
R1421	E-8
R1422	E-8
R1423	E-8
R1424	F-8
R1425	E-8
R1426	E-9
R1460	E-8
R1461	E-8
R1462	C-8
R1463	C-8
R1465	D-7
R1476	D-11
R1485	D-11
R1486	C-11
R1487	C-10
R1488	D-11
R1489	D-11
R1490	D-11
R1491	D-11
R1492	D-11
R1601	F-6
R1603	E-5
R1616	G-5
R1620	F-13
R1621	F-5
R1622	E-5
R1628	F-4
R1629	F-4
R1630	F-4
R1632	F-14
R1636	G-15
R1637	F-15
R1638	E-14
R1639	E-14
R1642	F-5
R1701	E-18
R1702	D-18
R1703	D-18
R1704	D-18
R1705	D-1
R1706	D-1
R1707	D-1
R1708	D-1
R1709	D-1
R1710	D-1
R1711	C-1
R1712	C-1
R1713	D-1
R1714	D-1
R1715	C-1
R1731	E-18
R1732	E-1
R1751	E-16
R1752	F-16
R1755	F-16
R1756	G-17
R1757	G-17
R1762	F-16
R1772	E-2
R1773	E-2
R1774	G-16
R1775	E-16
R1776	G-16
R1778	E-2
R1779	G-16
R1780	G-16
R1781	E-16
R1782	G-16
R1783	E-17
R1784	E-17
R1785	E-18
R1786	F-2
R1787	F-16
R1789	E-16
R1790	F-18
R1791	F-18
R1792	F-18
R1794	F-18
R1795	F-18
R1796	F-18
R1797	F-1
R1798	E-1
R1799	E-1
R1800	E-1
R1801	F-1
R1802	F-1
R1803	G-1
R1804	F-1
R1805	F-1
R1806	G-1
R1807	G-1
R1808	G-1
R1809	E-1
R1810	F-1
R1811	F-1
R1812	F-2
R1813	F-2
R1814	F-2
R1815	F-1
R1819	G-17
R1820	G-17
R1821	G-16
R1822	G-1
R1823	G-17
R1826	G-17
R1827	G-17
R1836	F-18
R1851	A-15
R1852	A-15
R1853	B-15
R1854	B-15
R1855	A-4
R1856	A-4
R1857	A-4
R1859	B-15
R1860	B-15
R1861	F-16
R1862	F-15
R1863	F-15
R1865	A-2
R1867	A-4
R1868	A-2
R1869	A-2
R1872	A-17
R1873	A-2
R1874	A-17
R1875	A-17
R1876	A-17
R1877	B-1
R1878	A-1
R1879	A-1
R1880	B-2
R1881	A-17
R1882	B-2
R1883	A-17
R1884	B-2
R1887	A-2
R1888	B-1
R1889	A-1
R1890	A-1
R1891	A-1
R1892	A-1
R1893	A-16
R1894	A-1
R1895	A-2
R1896	B-1
R1897	A-4
R1898	A-2
R1953	C-9
R1954	B-10
R1955	B-9
R1956	A-8
R1957	A-8
R1958	A-8
R1961	C-8
R1962	B-8
R1963	A-11
R1964	A-11
R1965	B-7
R1966	C-7
R1967	C-7
R1969	C-7
R1970	C-7
R1971	C-8
R1972	B-7
R1973	B-12
R1977	A-11
R1979	C-8
R1980	C-8
R1982	A-11
R1986	A-11
R1991	B-8
R2001	C-12
R2010	A-11
R2011	C-12
R2012	A-8
R2015	C-11
R2017	B-11
R2020	B-10
R2021	B-10
R2022	B-11
R2023	B-11
R2024	B-11
R2026	B-11
R2029	B-11
R2031	B-10
R2036	A-7
R2037	A-7
R2038	A-7
R2044	B-8
R2046	B-8
R2047	B-7
R2048	B-7
R2049	B-8
R2051	D-2
R2056	D-2
R2058	E-2
R2060	D-2
R2061	D-2
R2062	E-2
R2063	D-2
R2064	D-2
R2065	E-2
R2070	B-18
R2071	B-18
R2074	B-1
R2075	D-2
R2076	C-2
R2151	B-8
R2152	B-8
R2154	C-12
R2162	C-7
TH1751	C-7
X1305	E-13
X1601	F-4
X1751	E-17
X1752	G-18
X1951	C-10
X1952	C-11

- **For Printed Wiring Boards.**
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor

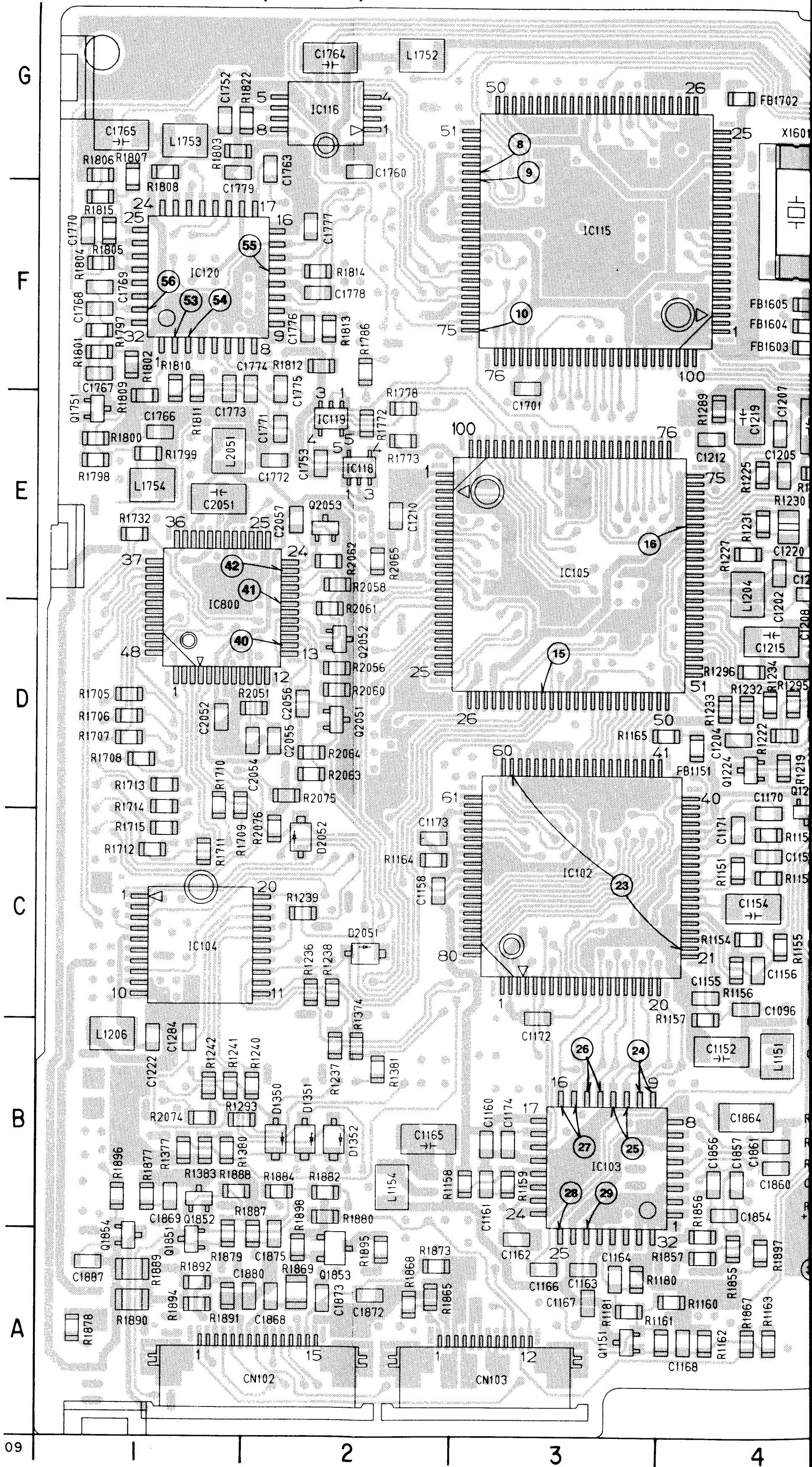




VC-190 (CAMERA, Y/C PROCESS, VIDEO PROCESS, REC/PB HEAD AMP, SE

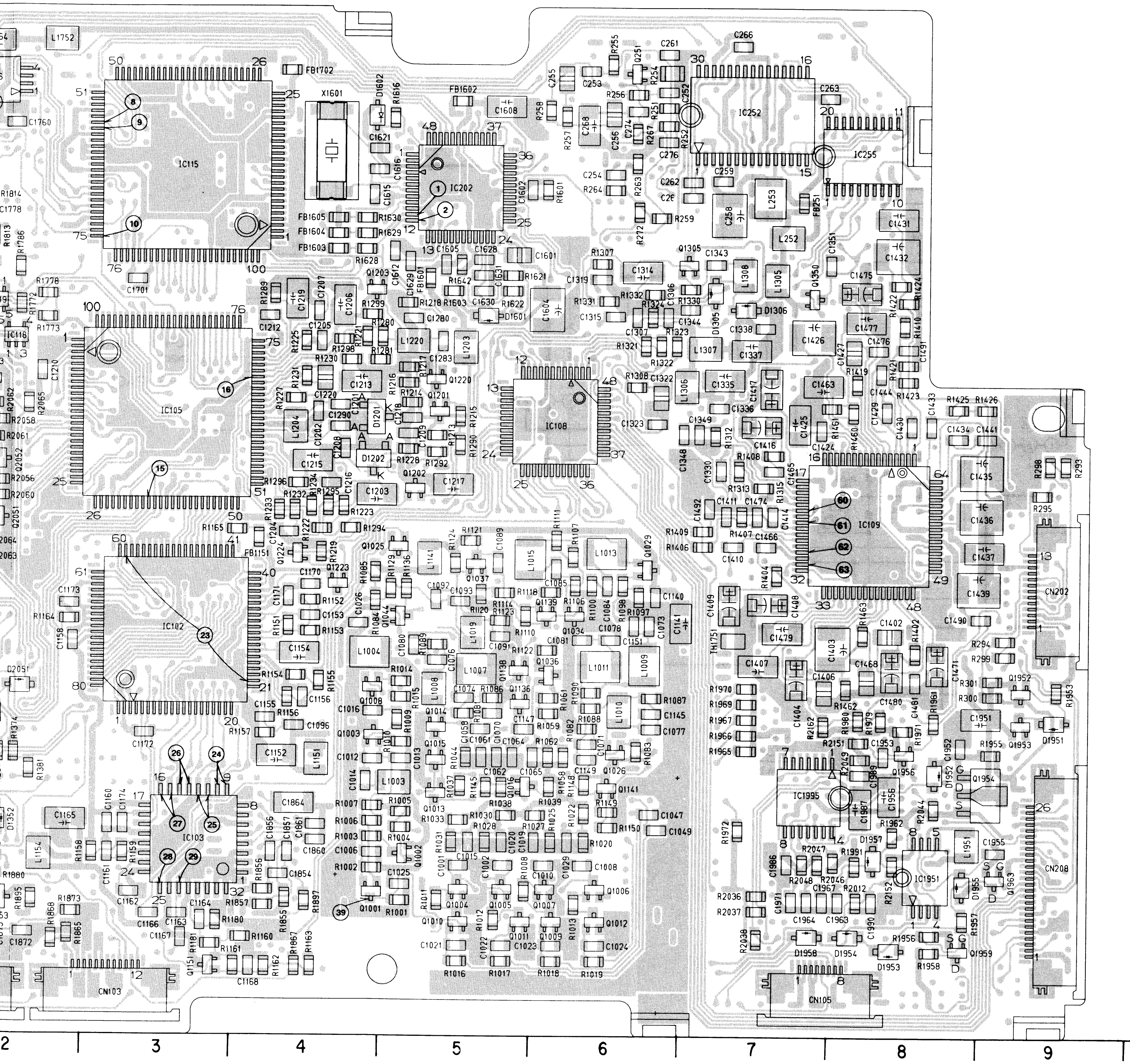
– Ref No. VC-190 BOARD: 10,000 series –

VC-190 BOARD (SIDE B)

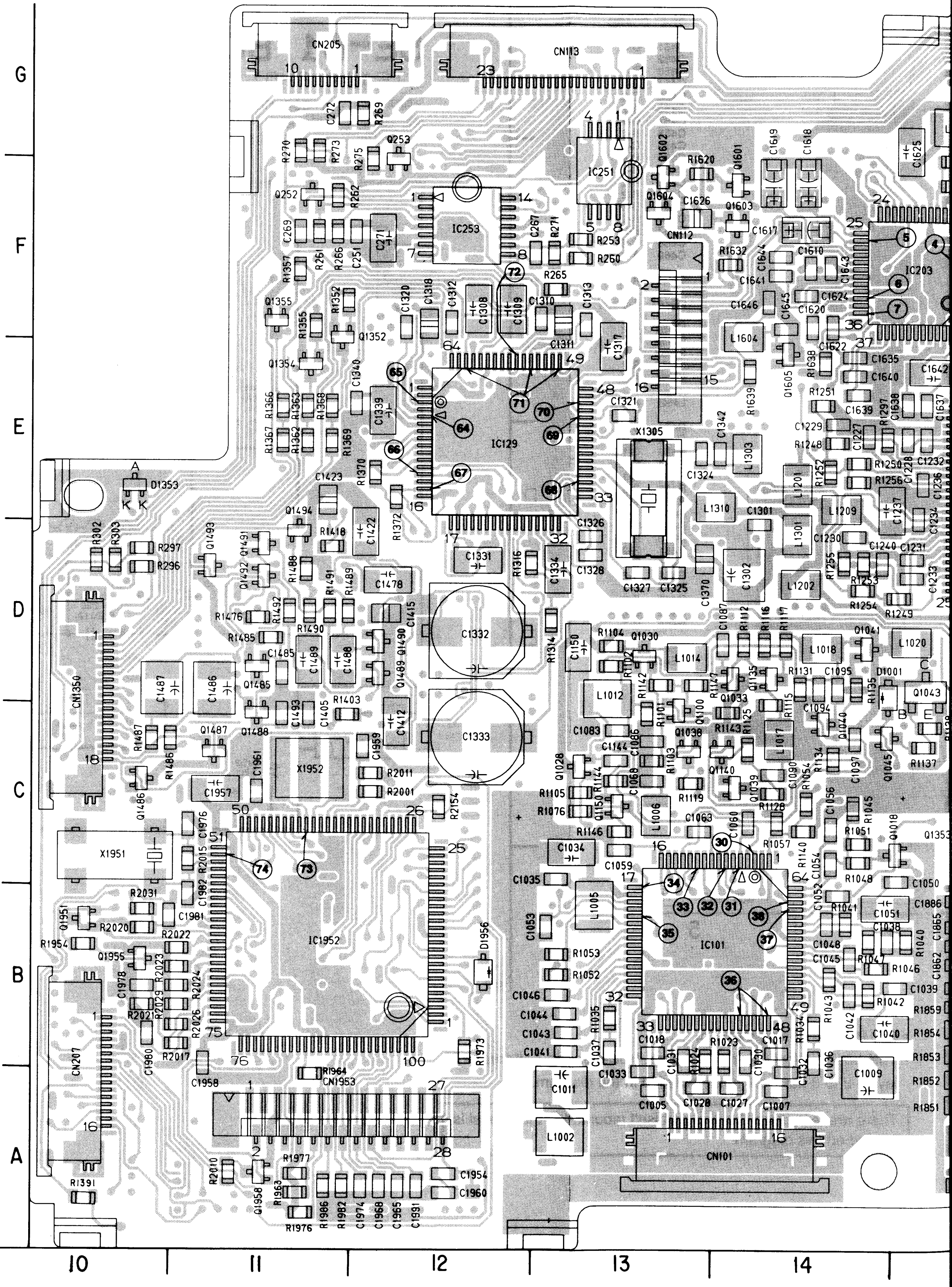


SS, VIDEO PROCESS, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, AUDIO, VIDEO IN/OUT, MODE CONTROL) PRINTED WIRING BOARD

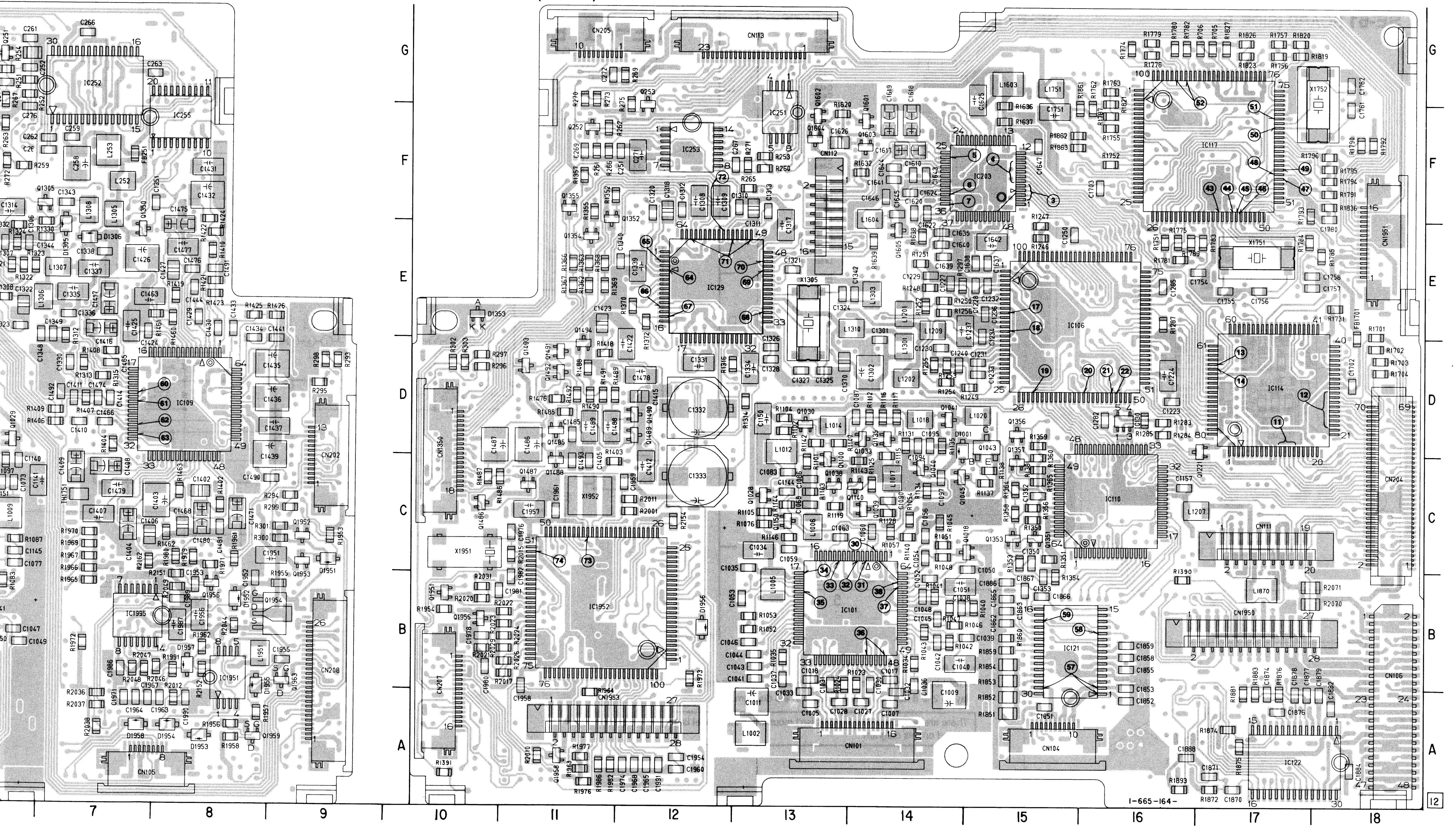
B)


IC115
IC202
IC252
IC255
IC105
IC108
IC109
IC102
IC103
IC1995
IC1951
X1601
CN103
CN105
CN202
CN208
2
3
4
5
6
7
8
9

VC-190 BOARD (SIDE A)


G
F
E
D
C
B
A
CN205
CN113
IC251
IC253
IC129
IC203
IC1952
IC101
X1305
X1951
X1952
CN1350
CN207
CN1953
CN101
10
11
12
13
14

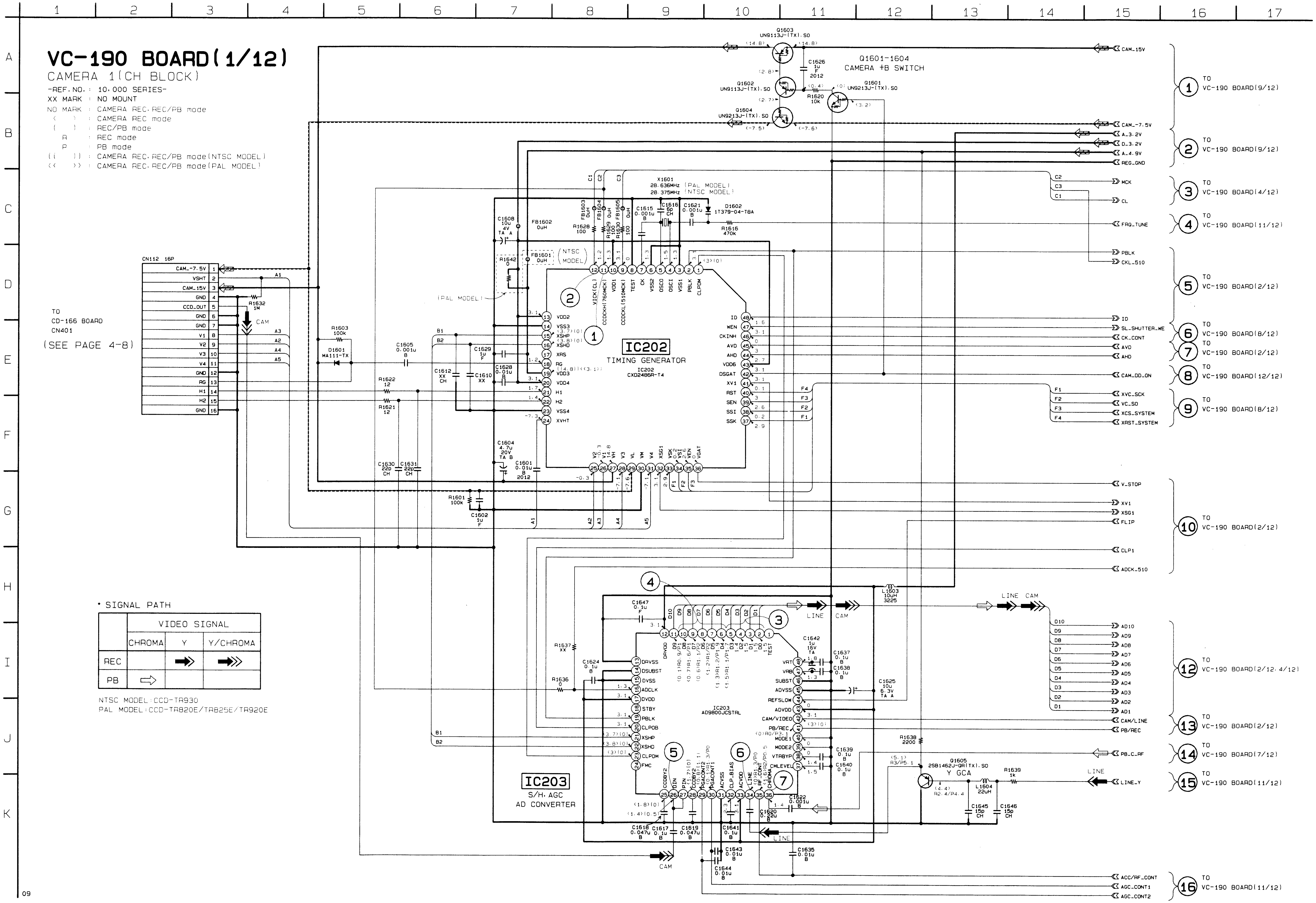
VC-190 BOARD (SIDE A)


G
F
E
D
C
B
A
7
8
9
10
11
12
13
14
15
16
17
18
IC252
IC255
IC109
IC1995
IC1951
CN202
CN208
CN105
CN205
CN113
CN112
IC251
IC253
IC129
X1305
IC203
IC117
X1752
X1751
IC106
IC114
CN1951
CN350
X1952
IC110
CN111
CN204
X1951
IC1952
IC101
IC121
CN1950
CN106
CN207
CN1953
CN101
CN104
IC122
1-665-164-
12

VC-190 BOARD(1/12)

CAMERA 1(CH BLOCK)

-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC, REC/PB mode
〈 〉 : CAMERA REC mode
( ) : REC/PB mode
R : REC mode
P : PB mode
(( )) : CAMERA REC, REC/PB mode(NTSC MODEL)
〈〈 〉〉 : CAMERA REC, REC/PB mode(PAL MODEL)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
K
CN112 16P
CAM_-7.5V 1
VSHT 2
CAM_15V 3
GND 4
CCD_OUT 5
GND 6
GND 7
V1 8
V2 9
V3 10
V4 11
GND 12
RG 13
H1 14
H2 15
GND 16
TO
CD-166 BOARD
CN401
(SEE PAGE 4-8)
R1632 1M
CAM
A1
A2
A3
A4
A5
B1
B2
R1603 100k
D1601 MA111-TX
C1605 0.001u B
R1622 12
R1621 12
C1630 22p CH
C1631 22p CH
C1612 XX CH
C1610 XX
C1629 1u F
C1628 0.01u B
C1604 4.7u 20V TA B
C1601 0.01u B 2012
R1601 100k
C1602 1u F
C1608 10u 4V TA A
FB1602 0uH
R1642 0
FB1601 0uH
(NTSC MODEL)
(PAL MODEL)
R1628 100
FB1603 0uH
FB1604 0uH
R1629 100
R1630 100
FB1605 0uH
C1
C2
C3
X1601
28.636MHz (PAL MODEL)
28.375MHz (NTSC MODEL)
C1615 0.001u B
C1616 6p CH
C1621 0.001u B
D1602 1T379-04-T8A
R1616 470k
IC202
TIMING GENERATOR
IC202 CXD2486R-T4
VICK(CL)
CCDCKH(760MCK)
VDD1
CCDCKL(510MCK)
TEST
CK
VSS2
OSCO
OSCI
VSS1
PBLK
CLPDM
VDD2
VSS3
XSHP
XSHD
XRS
RG
VDD3
VDD4
H1
H2
VSS4
XVHT
V2
V1
VH
V3
VL
VM
V4
XSG1
VSK
VSI
VEN
VGAT
ID
WEN
CKINH
AVD
AHD
VDD6
DSGAT
XV1
RST
SEN
SSI
SSK
F1
F2
F3
F4
Q1603 UN9113J-(TX).SO
Q1602 UN9113J-(TX).SO
Q1604 UN9213J-(TX).SO
Q1601 UN9213J-(TX).SO
C1626 1u F 2012
R1620 10K
Q1601-1604
CAMERA +B SWITCH
CAM_15V
CAM_-7.5V
A_3.2V
D_3.2V
A_4.9V
REG_GND
MCK
CL
FRQ_TUNE
PBLK
CKL_510
ID
SL_SHUTTER_WE
CK_CONT
AVD
AHD
CAM_DD_ON
XVC_SCK
VC_SO
XCS_SYSTEM
XRST_SYSTEM
V_STOP
XV1
XSG1
FLIP
CLP1
ADCK_510
TO VC-190 BOARD(9/12)
TO VC-190 BOARD(9/12)
TO VC-190 BOARD(4/12)
TO VC-190 BOARD(11/12)
TO VC-190 BOARD(2/12)
TO VC-190 BOARD(8/12)
TO VC-190 BOARD(2/12)
TO VC-190 BOARD(12/12)
TO VC-190 BOARD(8/12)
TO VC-190 BOARD(2/12)
IC203
S/H, AGC
AD CONVERTER
IC203 AD9800JCSTRL
DRVDD
DRVSS
DSUBST
DVSS
ADCLK
DVDD
STBY
PBLK
CLPOB
XSHP
XSHD
CLPDM
FMC
CCDBY2
DIN
PIN
CCDBY2
PGACONT2
PGACONT1
ACVSS
CLP_BIAS
ACVDD
LINE
RF_CONT
CHROMA
VRT
VRB
SUBST
ADVSS
REFSLOW
ADVDD
CAM/VIDEO
PB/REC
MODE1
MODE2
VTRBYP
CMLEVEL
TEST
D0
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
R1637 XX
R1636 0
C1624 0.1u B
C1647 0.1u F
C1642 1u 16V TA
C1637 0.1u B
C1638 0.1u B
C1625 10u 6.3V TA A
C1639 0.1u B
C1640 0.1u B
C1622 0.001u B
C1620 0.22u B
C1618 0.047u B
C1617 0.1u B
C1619 0.047u B
C1641 0.1u B
C1643 0.01u B
C1644 0.01u B
C1635 0.01u B
L1603 10uH 3225
R1638 2200
Q1605 2SB1462J-QR(TX).SO
Y GCA
L1604 22uH
C1645 15p CH
C1646 15p CH
R1639 1k
LINE
CAM
AD10
AD9
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
CAM/LINE
PB/REC
PB_C_RF
LINE_Y
ACC/RF_CONT
AGC_CONT1
AGC_CONT2
TO VC-190 BOARD(2/12, 4/12)
TO VC-190 BOARD(2/12)
TO VC-190 BOARD(7/12)
TO VC-190 BOARD(11/12)
TO VC-190 BOARD(11/12)
09

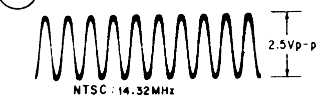
• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡》	➡》》
PB	⇨		

NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

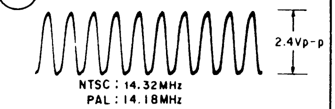
VC-190 BOARD (CH BLOCK)

①



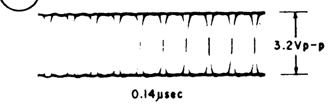
IC202 ⑪ REC/PB

②



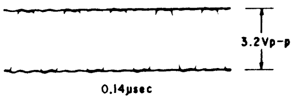
IC202 ⑫ REC/PB

③



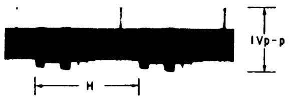
IC203 ②–⑤ CAMERA REC

④



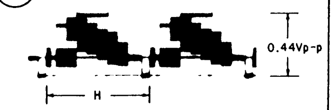
IC203 ⑥ – ⑩ CAMERA REC

⑤



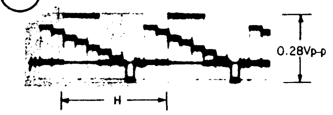
IC203 ㉖ CAMERA REC

⑥



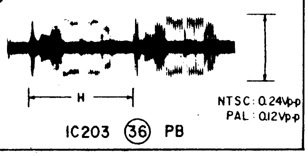
IC203 ㉞ REC(NTSC)

⑥



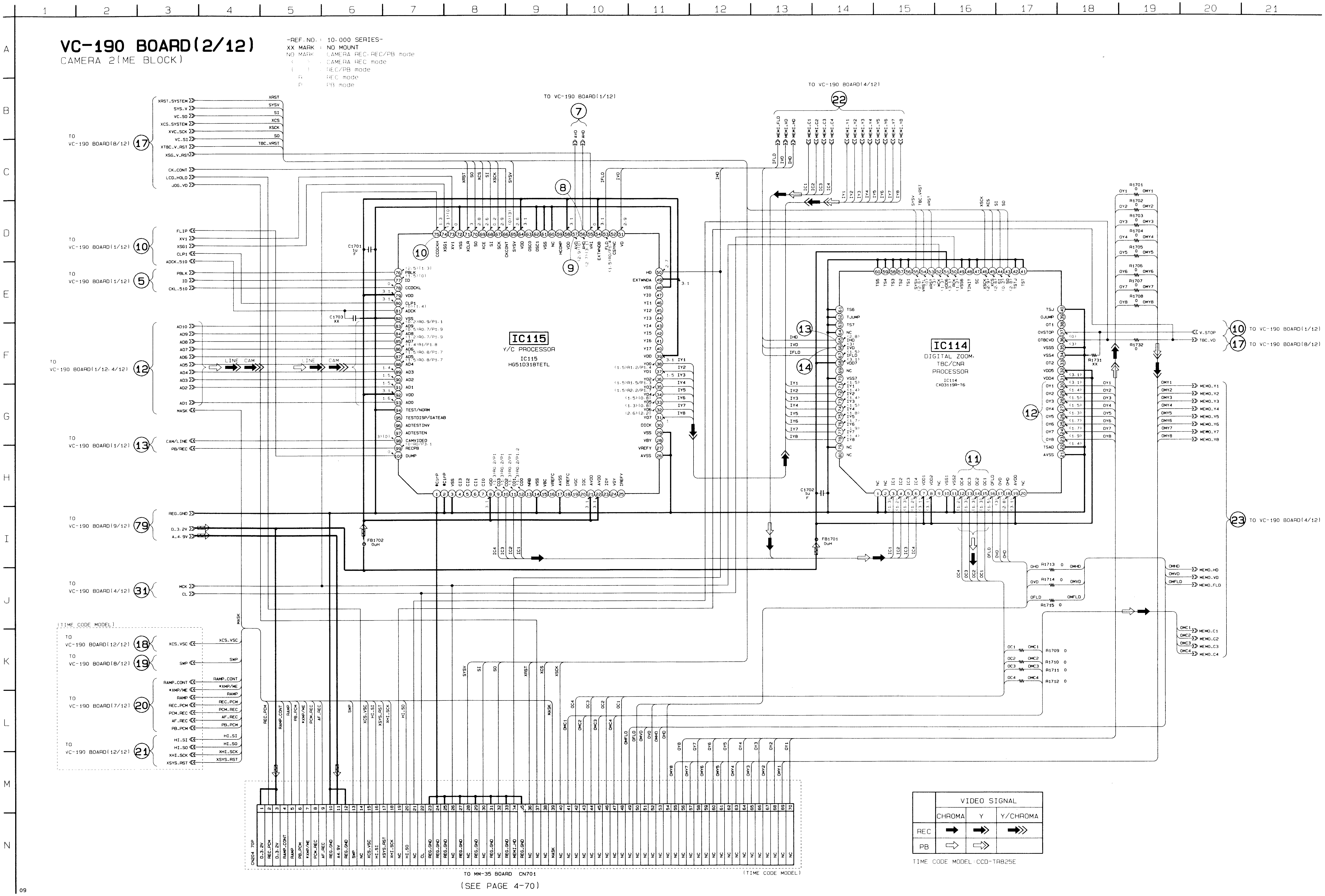
IC203 ㉞ REC(PAL)

⑦



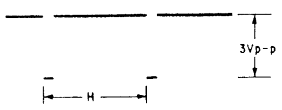
IC203 ㊱ PB

- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.


VC-190 BOARD(2/12)
CAMERA 2(ME BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC,REC/PB mode
CAMERA REC mode
REC/PB mode
R : REC mode
P : PB mode
TO VC-190 BOARD(8/12) ⑰
TO VC-190 BOARD(1/12) ⑩
TO VC-190 BOARD(1/12) ⑤
TO VC-190 BOARD(1/12,4/12) ⑫
TO VC-190 BOARD(1/12) ⑬
TO VC-190 BOARD(9/12) (79)
TO VC-190 BOARD(4/12) (31)
(TIME CODE MODEL)
TO VC-190 BOARD(12/12) ⑱
TO VC-190 BOARD(8/12) ⑲
TO VC-190 BOARD(7/12) ⑳
TO VC-190 BOARD(12/12) ㉑
TO VC-190 BOARD(1/12) ⑦
TO VC-190 BOARD(4/12) ㉒
TO VC-190 BOARD(1/12) ⑩
TO VC-190 BOARD(8/12) ⑰
TO VC-190 BOARD(4/12) ㉓
IC115
Y/C PROCESSOR
IC115 HG51D31BTETL
IC114
DIGITAL ZOOM, TBC/CNR PROCESSOR
IC114 CXD3119R-T6
C1701 1u F
C1703 XX
C1702 1u F
FB1702 0uH
FB1701 0uH
R1701 – R1708 0
R1709 0
R1710 0
R1711 0
R1712 0
R1713 0
R1714 0
R1715 0
R1731 XX
R1732 0
LINE CAM
V.STOP
TBC.VD
REG.GND
D.3.2V
A.4.9V
MCK
CL
CN204 70P
TO MM-35 BOARD CN701
(SEE PAGE 4-70)
(TIME CODE MODEL)
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
TIME CODE MODEL: CCD-TR825E

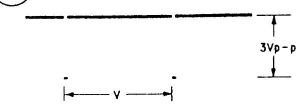
VC-190 BOARD (ME BLOCK)

⑧



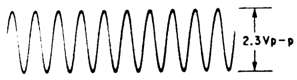
IC115 (56) CAMERA REC

⑨



IC115 (57) CAMERA REC

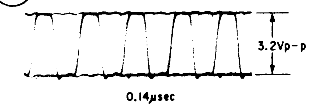
⑩



NTSC : 14.32MHz
PAL : 14.18MHz

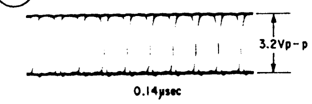
IC115 (75) CAMERA REC

⑪



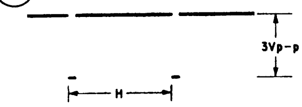
IC114 ⑫ – ⑮ CAMERA REC

⑫



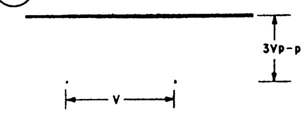
IC114 ㉓ – ㉚ CAMERA REC

⑬



IC114 (65) CAMERA REC

⑭



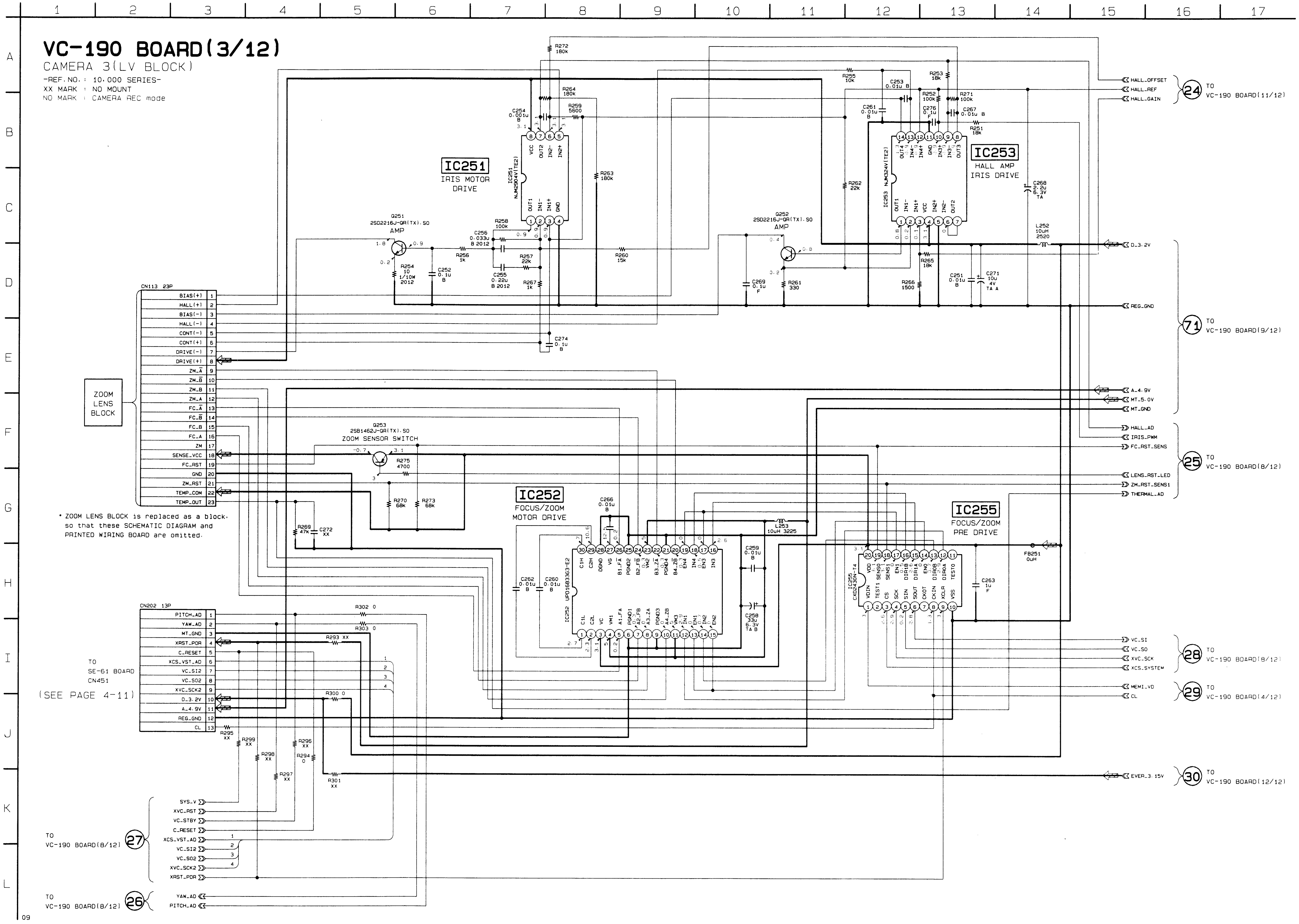
IC114 (66) CAMERA REC

- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.

VC-190 BOARD(3/12)

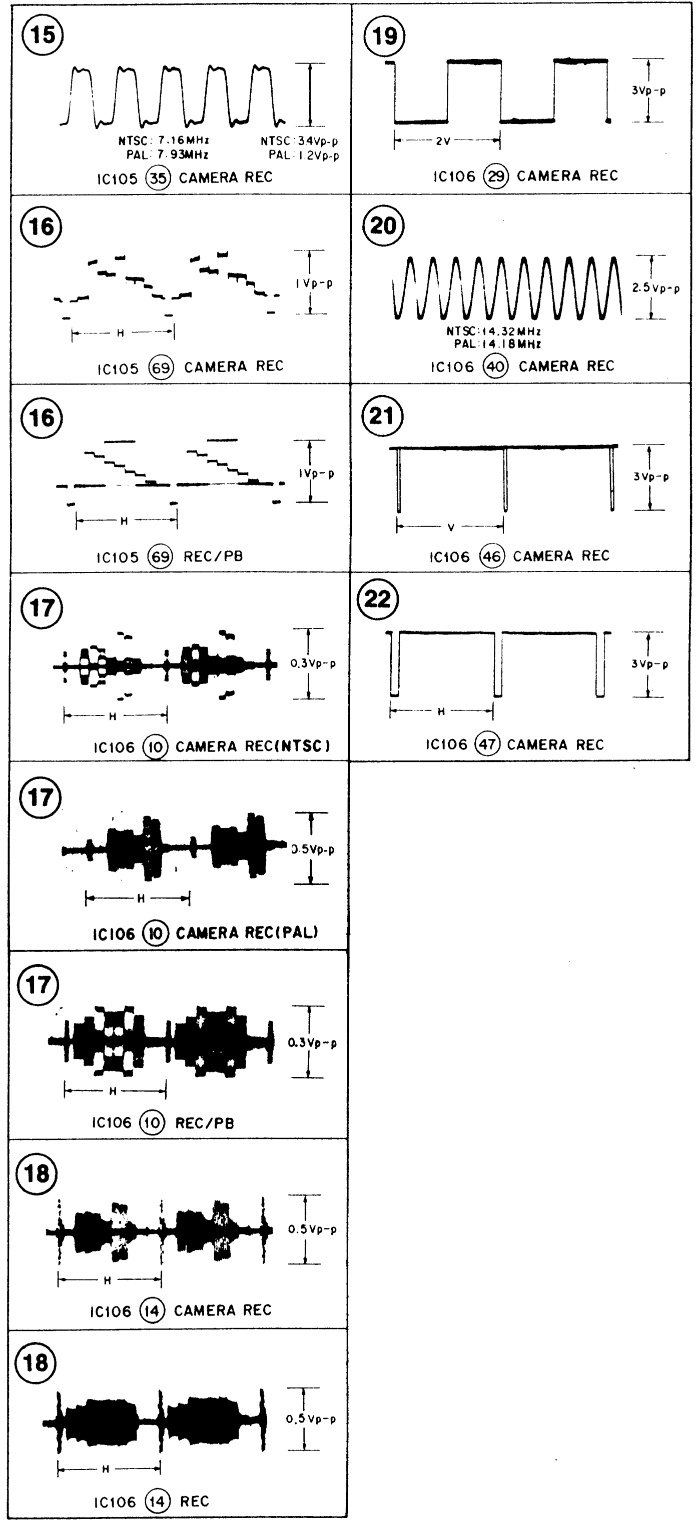
CAMERA 3(LV BLOCK)

-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J K L
IC251
IRIS MOTOR DRIVE
IC251 NJM2904V(TE2)
Q251 2SD2216J-QR(TX).SO AMP
Q252 2SD2216J-QR(TX).SO AMP
IC253
HALL AMP IRIS DRIVE
IC253 NJM3240V(TE2)
IC252
FOCUS/ZOOM MOTOR DRIVE
IC252 UPD16833G3-E2
IC255
FOCUS/ZOOM PRE DRIVE
IC255 CXD2430M-T4
Q253 2SB1462J-QR(TX).SO ZOOM SENSOR SWITCH
CN113 23P
BIAS(+)
HALL(+)
BIAS(-)
HALL(-)
CONT(-)
CONT(+)
DRIVE(-)
DRIVE(+)
ZM_Ā
ZM_B̄
ZM_B
ZM_A
FC_Ā
FC_B̄
FC_B
FC_A
ZM
SENSE_VCC
FC_RST
GND
ZM_RST
TEMP_COM
TEMP_OUT
ZOOM LENS BLOCK
• ZOOM LENS BLOCK is replaced as a block, so that these SCHEMATIC DIAGRAM and PRINTED WIRING BOARD are omitted.
CN202 13P
PITCH_AD
YAW_AD
MT_GND
XRST_POR
C_RESET
XCS_VST_AD
VC_SI2
VC_SO2
XVC_SCK2
D_3.2V
A_4.9V
REG_GND
CL
TO SE-61 BOARD CN451 (SEE PAGE 4-11)
HALL_OFFSET
HALL_REF
HALL_GAIN
24 TO VC-190 BOARD(11/12)
D_3.2V
REG_GND
A_4.9V
MT_5.0V
MT_GND
71 TO VC-190 BOARD(9/12)
HALL_AD
IRIS_PWM
FC_RST_SENS
LENS_RST_LED
ZM_RST_SENS1
THERMAL_AD
25 TO VC-190 BOARD(8/12)
VC_SI
VC_SO
XVC_SCK
XCS_SYSTEM
28 TO VC-190 BOARD(8/12)
MEMI_VD
CL
29 TO VC-190 BOARD(4/12)
EVER_3.15V
30 TO VC-190 BOARD(12/12)
SYS_V
XVC_RST
VC_STBY
C_RESET
XCS_VST_AD
VC_SI2
VC_SO2
XVC_SCK2
XRST_POR
27 TO VC-190 BOARD(8/12)
YAW_AD
PITCH_AD
26 TO VC-190 BOARD(8/12)
R272 180k
R264 180k
R259 5600
C254 0.001u B
R263 180k
R258 100k
C256 0.033u B 2012
R256 1k
R254 10 1/10W 2012
C252 0.1u B
R257 22K
C255 0.22u B 2012
R267 1K
R260 15k
C274 0.1u B
R255 10k
C253 0.01u B
R253 18k
R252 100k
R271 100k
C261 0.01u B
C276 0.1u F
C267 0.01u B
R251 18K
R262 22k
C268 2.2u 6.3V TA
L252 10uH 2520
R265 18k
R266 1500
C251 0.01u B
C271 10u 4V TA A
C269 0.1u F
R261 330
R275 4700
R270 68K
R273 68K
R269 47k
C272 XX
C266 0.01u B
L253 10uH 3225
C259 0.01u B
C258 33u 6.3V TA B
C262 0.01u B
C260 0.01u B
C263 1u F
FB251 0uH
R302 0
R303 0
R293 XX
R300 0
R295 XX
R299 XX
R298 XX
R297 XX
R296 XX
R294 0
R301 XX
09

- For schematic diagrams.
- Refer to page 4–15 for Printed Wiring Board.

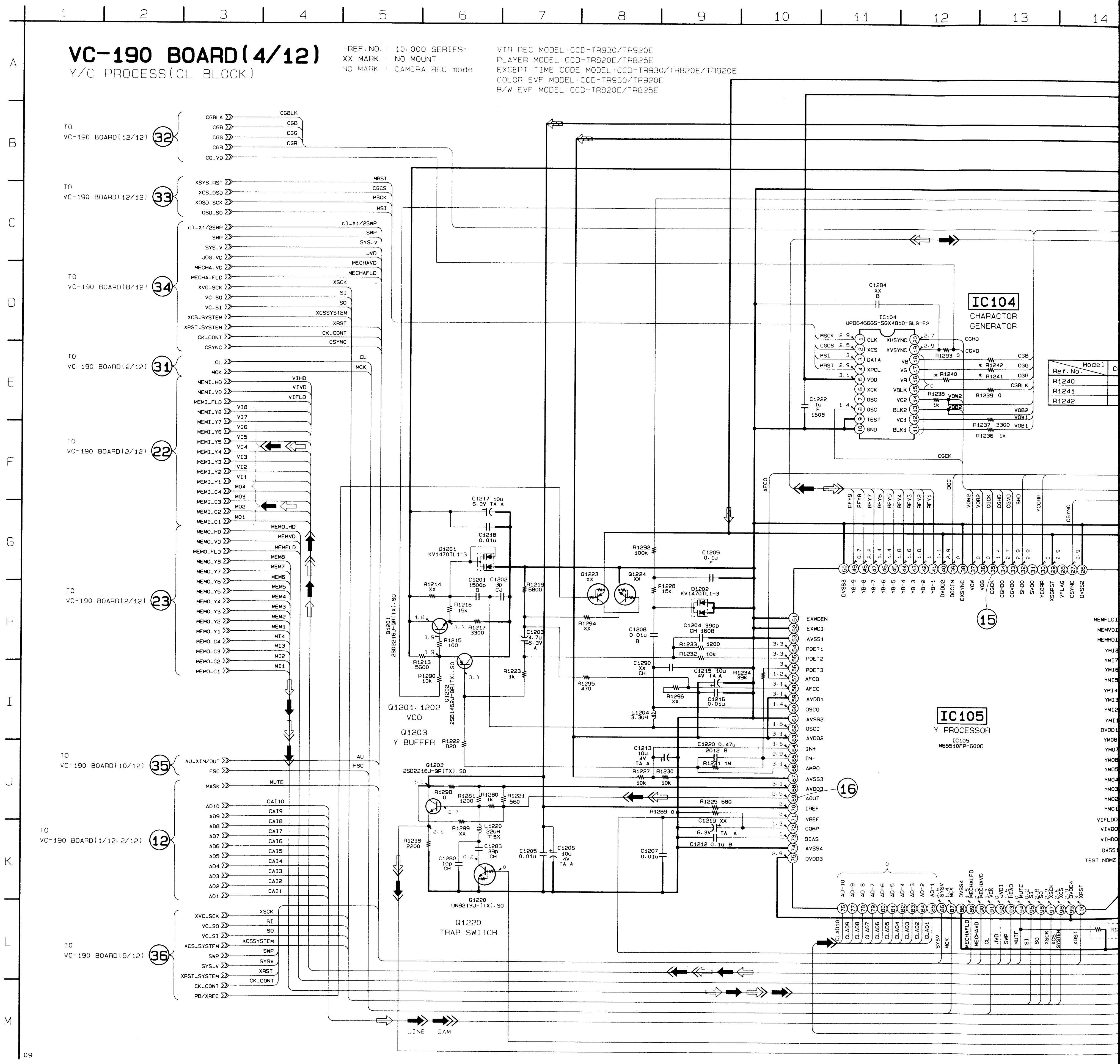
VC-190 BOARD (CL BLOCK)

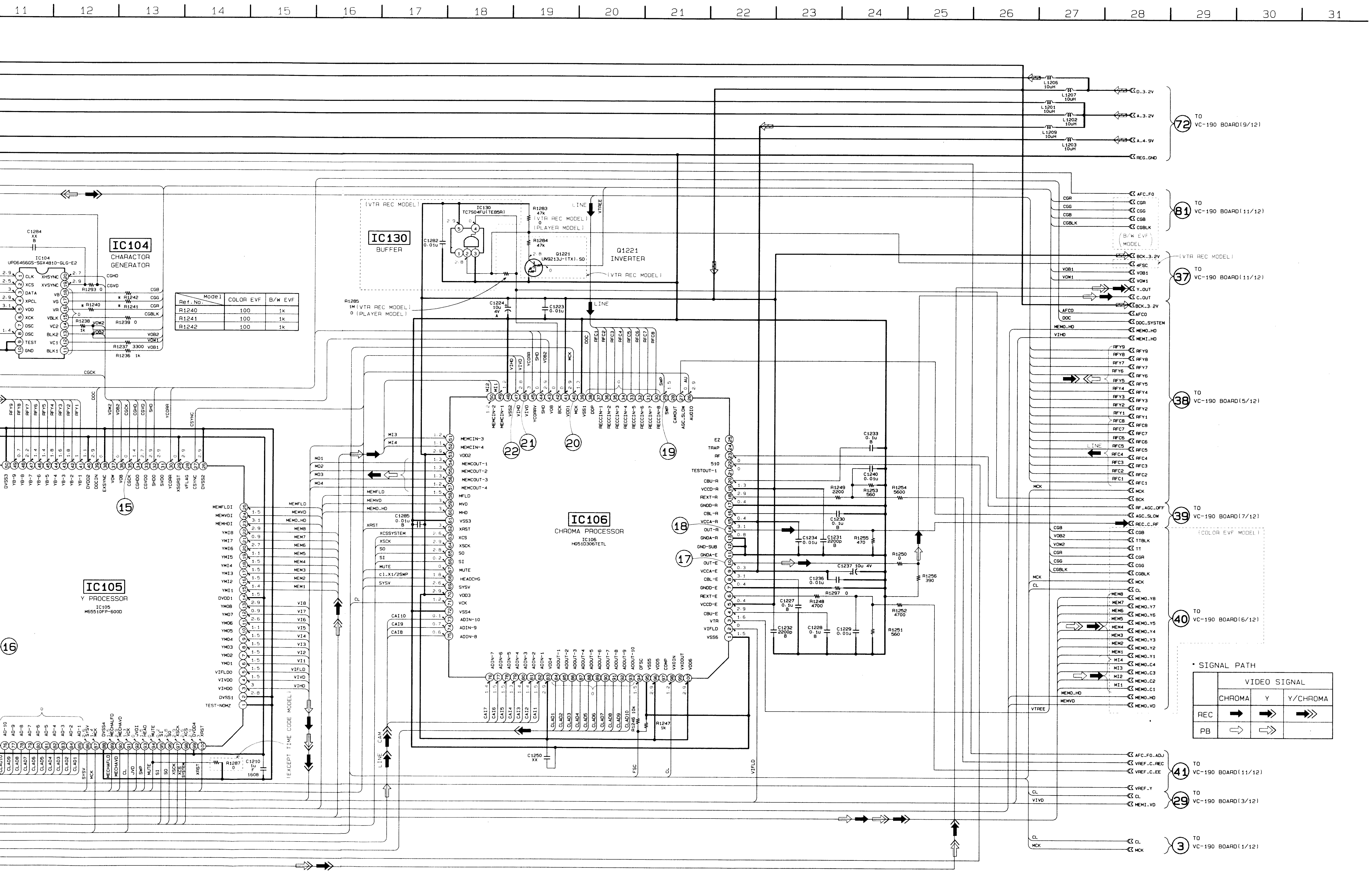


VC-190 BOARD (4/12)
Y/C PROCESS (CL BLOCK)

-REF. NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

VTR REC MODEL: CCD-TR930/TR920E
PLAYER MODEL: CCD-TR820E/TR825E
EXCEPT TIME CODE MODEL: CCD-TR930/TR820E/TR920E
COLOR EVF MODEL: CCD-TR930/TR920E
B/W EVF MODEL: CCD-TR820E/TR825E


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I J K L M
TO VC-190 BOARD(12/12) ㉜
CGBLK CGB CGG CGR CG_VD
TO VC-190 BOARD(12/12) ㉝
XSYS_RST XCS_OSD XOSD_SCK OSD_SO
MRST CSCS MSCK MSI
TO VC-190 BOARD(8/12) ㉞
CL_X1/2SWP SWP SYS_V JOG_VD MECHA_VD MECHA_FLD XVC_SCK VC_SO VC_SI XCS_SYSTEM XRST_SYSTEM CK_CONT CSYNC
TO VC-190 BOARD(2/12) ㉛
CL MCK
TO VC-190 BOARD(2/12) ㉒
MEMI_HD MEMI_VD MEMI_FLD MEMI_Y8 MEMI_Y7 MEMI_Y6 MEMI_Y5 MEMI_Y4 MEMI_Y3 MEMI_Y2 MEMI_Y1 MEMI_C4 MEMI_C3 MEMI_C2 MEMI_C1
VIHD VIVD VIFLD VI8 VI7 VI6 VI5 VI4 VI3 VI2 VI1 MO4 MO3 MO2 MO1
TO VC-190 BOARD(2/12) ㉓
MEMO_HD MEMO_VD MEMO_FLD MEMO_Y8 MEMO_Y7 MEMO_Y6 MEMO_Y5 MEMO_Y4 MEMO_Y3 MEMO_Y2 MEMO_Y1 MEMO_C4 MEMO_C3 MEMO_C2 MEMO_C1
MEMO_HD MEMVD MEMFLD MEM8 MEM7 MEM6 MEM5 MEM4 MEM3 MEM2 MEM1 MI4 MI3 MI2 MI1
TO VC-190 BOARD(10/12) ㉟
AU_XIN/OUT FSC
AU FSC
MASK MUTE
TO VC-190 BOARD(1/12, 2/12) ⑫
AD10 AD9 AD8 AD7 AD6 AD5 AD4 AD3 AD2 AD1
CAI10 CAI9 CAI8 CAI7 CAI6 CAI5 CAI4 CAI3 CAI2 CAI1
TO VC-190 BOARD(5/12) ㊱
XVC_SCK VC_SO VC_SI XCS_SYSTEM SWP SYS_V XRST_SYSTEM CK_CONT PB/XREC
XSCK SI SO XCSSYSTEM SWP SYSV XRST CK_CONT
C1217 10u 6.3V TA A
C1218 0.01u
D1201 KV1470TL1-3
R1214 XX
C1201 1500p B
C1202 3p CJ
R1219 6800
R1216 15k
R1217 3300
R1215 100
R1213 5600
R1290 10k
C1203 4.7u 6.3V A
R1223 1k
Q1201 2SD2216J-QR(TX).SO
Q1202 2SB1462J-QR(TX).SO
Q1201, 1202 VCO
Q1203 Y BUFFER
R1222 820
Q1203 2SD2216J-QR(TX).SO
R1298 0
R1281 1200
R1280 1k
R1221 560
R1299 XX
L1220 22uH ±5%
C1283 39p CH
R1218 2200
C1280 10p CH
C1205 0.01u
C1206 10u 4V TA A
Q1220 UN9213J-(TX).SO
Q1220 TRAP SWITCH
LINE CAM
Q1223 XX
Q1224 XX
R1292 100k
R1294 XX
R1295 470
R1228 15k
D1202 KV1470TL1-3
C1209 0.1u F
C1204 390p CH 1608
C1208 0.01u B
R1233 1200
R1232 10k
C1290 XX CH
C1215 10u 4V TA A
R1234 39k
R1296 XX
C1216 0.01u
L1204 3.3uH
C1213 10u 4V TA A
C1220 0.47u 2012 B
R1231 1M
R1227 10k
R1230 10k
R1225 680
R1289 0
C1219 XX 6.3V TA A
C1212 0.1u B
C1207 0.01u
C1284 XX B
IC104 UPD6466GS-SGX4810-GLG-E2
IC104 CHARACTOR GENERATOR
MSCK CSCS MSI MRST
CLK XCS DATA XPCL VDD XCK OSC OSC TEST GND
XHSYNC XVSYNC VB VG VR VBLK VC2 BLK2 VC1 BLK1
R1293 0
CGHD CGVD
R1242 R1241 R1240 R1239 0 R1238 1k R1237 3300 R1236 1k
CGB CGG CGR CGBLK VOB2 VOH1 VOB1
C1222 1u F 1608
CGCK
Model
Ref. No.
R1240
R1241
R1242
IC105 Y PROCESSOR
IC105 M55510FP-6000
EXWDEN EXWDI AVSS1 POET1 POET2 POET3 AFCO AFCC AVDD1 OSCO AVSS2 OSCI AVDD2 IN+ IN- AMPO AVSS3 AVDD3 AOUT IREF VREF COMP BIAS AVSS4 DVDD3
DVSS3 YB-8 YB-7 YB-6 YB-5 YB-4 YB-3 YB-1 DVDD2 DOCIN EXSYNC VOW VOB CGCK CGHD CGVD SHDO SVDO YCDRA XSGRST VFLAG CSYNC DVSS2
RFY9 RFY8 RFY7 RFY6 RFY5 RFY4 RFY3 RFY2 RFY1 DOC VOW2 VOB2 CGCK CGHD CGVD SHD YCDRA CSYNC AFCO
MEMFLDI MEMVDI MEMHDI YMI8 YMI7 YMI6 YMI5 YMI4 YMI3 YMI2 YMI1 DVDD1 YMO8 YMO7 YMO6 YMO5 YMO4 YMO3 YMO2 YMO1 VIFLDO VIVDO VIHDO DVSS1 TEST-NOMZ
AD-10 AD-9 AD-8 AD-7 AD-6 AD-5 AD-4 AD-3 AD-2 AD-1 SYSV MCK DVSS4 MECHAFLD MECHAVD CL JVD SWP MUTE SI SO XCK XCS SYSTEM DVDD4 XRST
CLAD10 CLAD9 CLAD8 CLAD7 CLAD6 CLAD5 CLAD4 CLAD3 CLAD2 CLAD1 SYSV MECHAFLD MECHAVD CL JVD SWP MUTE SI SO XCK XCS SYSTEM XRST
⑮ ⑯
09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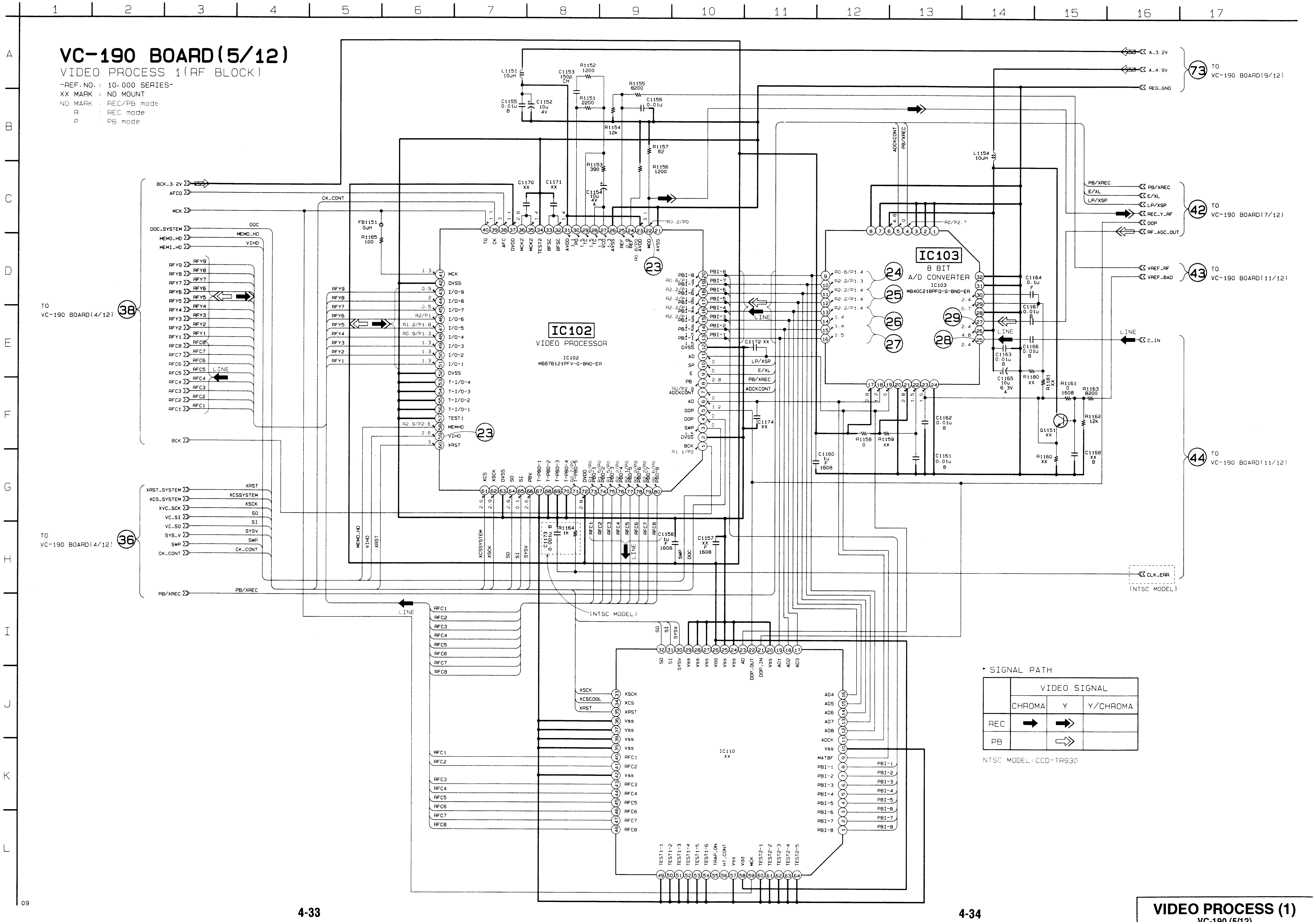
30
31
IC104
CHARACTOR GENERATOR
IC104 UPD6466GS-SGX4B10-GLG-E2
IC130
BUFFER
IC130 TC7S04FU(TE85R)
(VTR REC MODEL)
Q1221 INVERTER
Q1221 UN9213J-(TX).SO
R1283 47k (VTR REC MODEL) 0 (PLAYER MODEL)
R1285 1M (VTR REC MODEL) 0 (PLAYER MODEL)
IC105
Y PROCESSOR
IC105 M65510FP-600D
IC106
CHROMA PROCESSOR
IC106 HG51D306TETL
(EXCEPT TIME CODE MODEL)
LINE
CAM
TO VC-190 BOARD(9/12)
TO VC-190 BOARD(11/12)
TO VC-190 BOARD(11/12)
TO VC-190 BOARD(5/12)
TO VC-190 BOARD(7/12)
TO VC-190 BOARD(6/12)
TO VC-190 BOARD(11/12)
TO VC-190 BOARD(3/12)
TO VC-190 BOARD(1/12)
72
81
37
38
39
40
41
29
3
15
16
17
18
19
20
21
22
(B/W EVF MODEL)
(COLOR EVF MODEL)
D_3.2V
A_3.2V
A_4.9V
REG_GND
L1206 10uH
L1207 10uH
L1201 10uH
L1202 10uH
L1209 10uH
L1203 10uH

Ref.No. \ Model	COLOR EVF	B/W EVF
R1240	100	1k
R1241	100	1k
R1242	100	1k

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	⇛
PB	⇨	⇨	

- **For schematic diagrams.**
- Refer to page 4-15 for Printed Wiring Board.

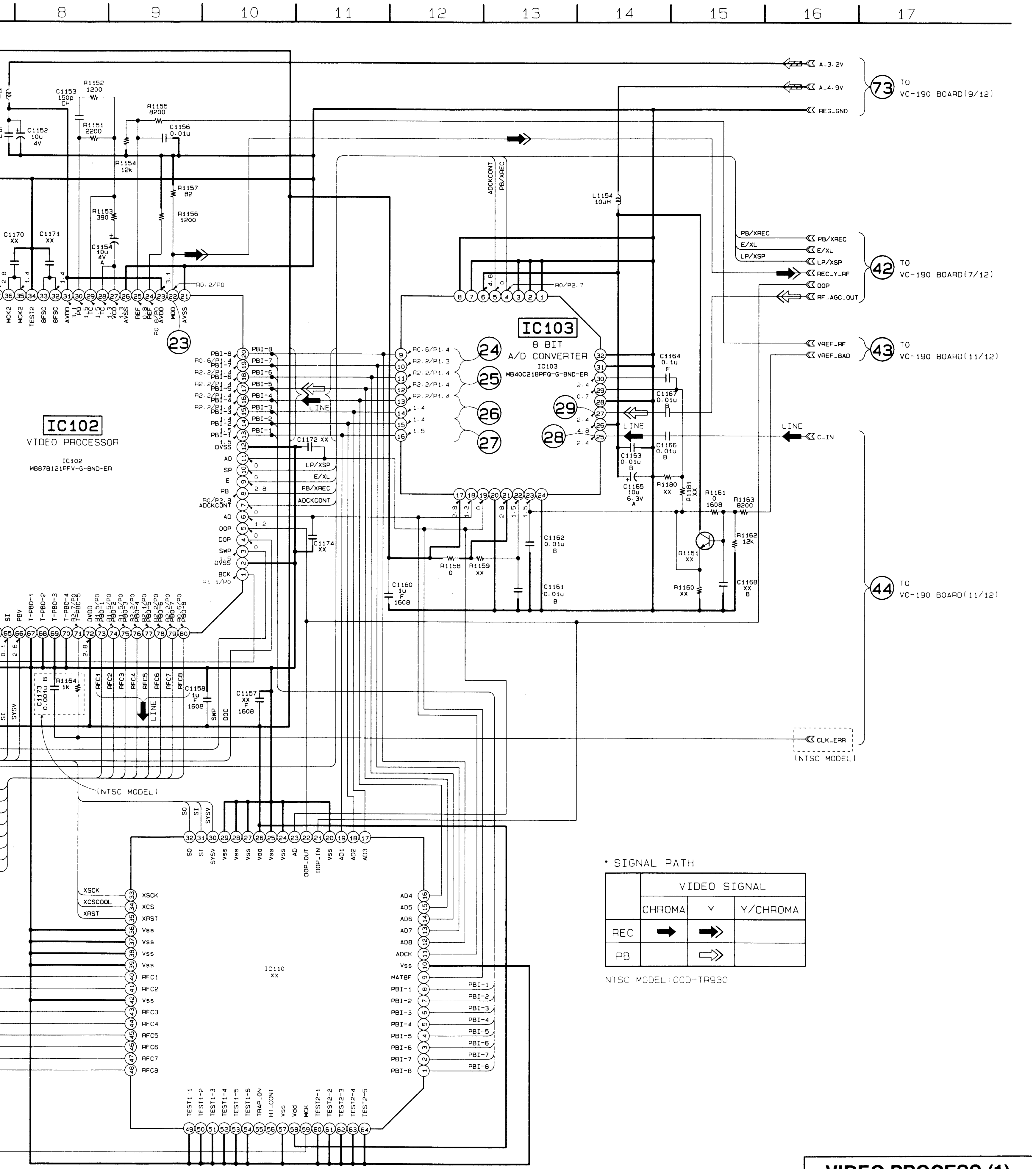

VC-190 BOARD(5/12)
VIDEO PROCESS 1(RF BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode
IC102
VIDEO PROCESSOR
IC102
MB87B121PFV-G-BND-ER
IC103
8 BIT
A/D CONVERTER
IC103
MB40C218PFG-G-BND-ER
IC110
XX
TO VC-190 BOARD(4/12) 38
TO VC-190 BOARD(4/12) 36
73 TO VC-190 BOARD(9/12)
42 TO VC-190 BOARD(7/12)
43 TO VC-190 BOARD(11/12)
44 TO VC-190 BOARD(11/12)
A_3.2V
A_4.9V
REG_GND
PB/XREC
E/XL
LP/XSP
REC_Y_RF
DOP
RF_AGC_OUT
VREF_RF
VREF_BAD
C_IN
CLK_ERR
(NTSC MODEL)
BCK_3.2V
AFCO
MCK
DOC_SYSTEM
MEMO_HD
MEMI_HD
RFY9
RFY8
RFY7
RFY6
RFY5
RFY4
RFY3
RFY2
RFY1
RFC8
RFC7
RFC6
RFC5
RFC4
RFC3
RFC2
RFC1
BCK
XRST_SYSTEM
XCS_SYSTEM
XVC_SCK
VC_SI
VC_SO
SYS_V
SWP
CK_CONT
PB/XREC
LINE
L1151 10uH
C1153 150p CH
R1152 1200
R1155 8200
C1155 0.01u B
C1152 10u 4V
R1151 2200
C1156 0.01u
R1154 12k
R1157 82
R1153 390
R1156 1200
C1154 10u 4V
C1170 XX
C1171 XX
FB1151 0uH
R1165 100
L1154 10uH
C1164 0.1u F
C1167 0.01u B
C1166 0.01u B
C1163 0.01u B
C1165 10u 6.3V A
R1180 XX
R1181 XX
R1161 0 1608
R1163 8200
Q1151 XX
R1162 12k
R1160 XX
C1168 XX B
C1162 0.01u B
C1161 0.01u B
R1158 0
R1159 XX
C1160 1u F 1608
C1172 XX
C1174 XX
C1173 0.001u B
R1164 1k
C1158 1u F 1608
C1157 XX F 1608

· SIGNAL PATH

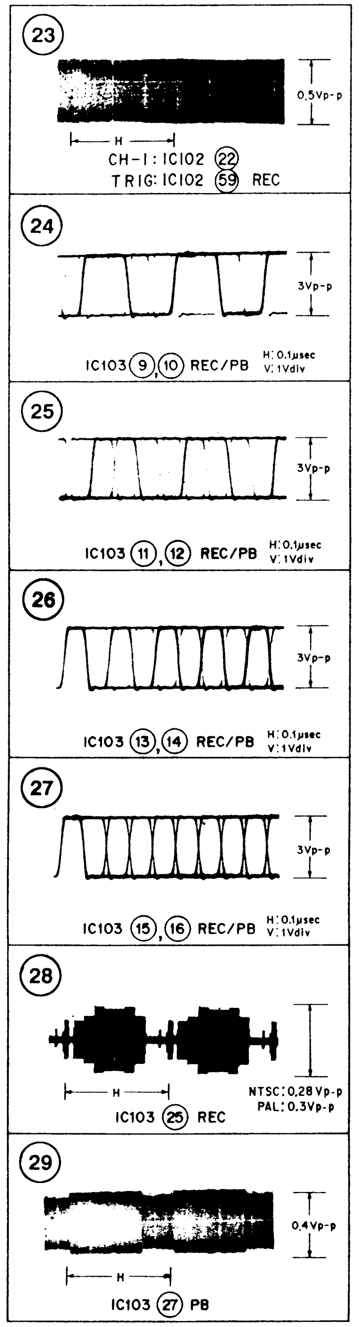
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	
PB		⇨	

NTSC MODEL:CCD-TR930

09


8
9
10
11
12
13
14
15
16
17
IC102
VIDEO PROCESSOR
IC102
MB87B121PFV-G-BND-ER
IC103
8 BIT
A/D CONVERTER
IC103
MB40C218PFQ-G-BND-ER
IC110
XX
A_3.2V
A_4.9V
REG_GND
73 TO VC-190 BOARD(9/12)
PB/XREC
E/XL
LP/XSP
REC_Y_RF
DOP
RF_AGC_OUT
42 TO VC-190 BOARD(7/12)
VREF_RF
VREF_BAD
43 TO VC-190 BOARD(11/12)
LINE
C_IN
44 TO VC-190 BOARD(11/12)
CLK_ERR
(NTSC MODEL)
(NTSC MODEL)
ADCKCONT
PB/XREC
L1154 10uH
R1152 1200
C1153 150p CH
R1151 2200
R1155 8200
C1156 0.01u
C1152 10u 4V
R1154 12k
R1157 82
R1153 390
R1156 1200
C1154 10u 4V
C1170 XX
C1171 XX
C1164 0.1u F
C1167 0.01u B
C1166 0.01u B
C1163 0.01u B
C1165 10u 6.3V
R1180 XX
R1181 XX
R1161 0 1608
R1163 8200
R1162 12k
Q1151 XX
R1160 XX
C1168 XX B
C1162 0.01u B
C1161 0.01u B
C1160 1u F 1608
R1158 0
R1159 XX
C1172 XX
C1174 XX
C1173 0.001 B
R1164 1k
C1158 1u F 1608
C1157 XX F 1608
PBI-1
PBI-2
PBI-3
PBI-4
PBI-5
PBI-6
PBI-7
PBI-8
XSCK
XCSCOOL
XRST
23
24
25
26
27
28
29

VC-190 BOARD (RF BLOCK)



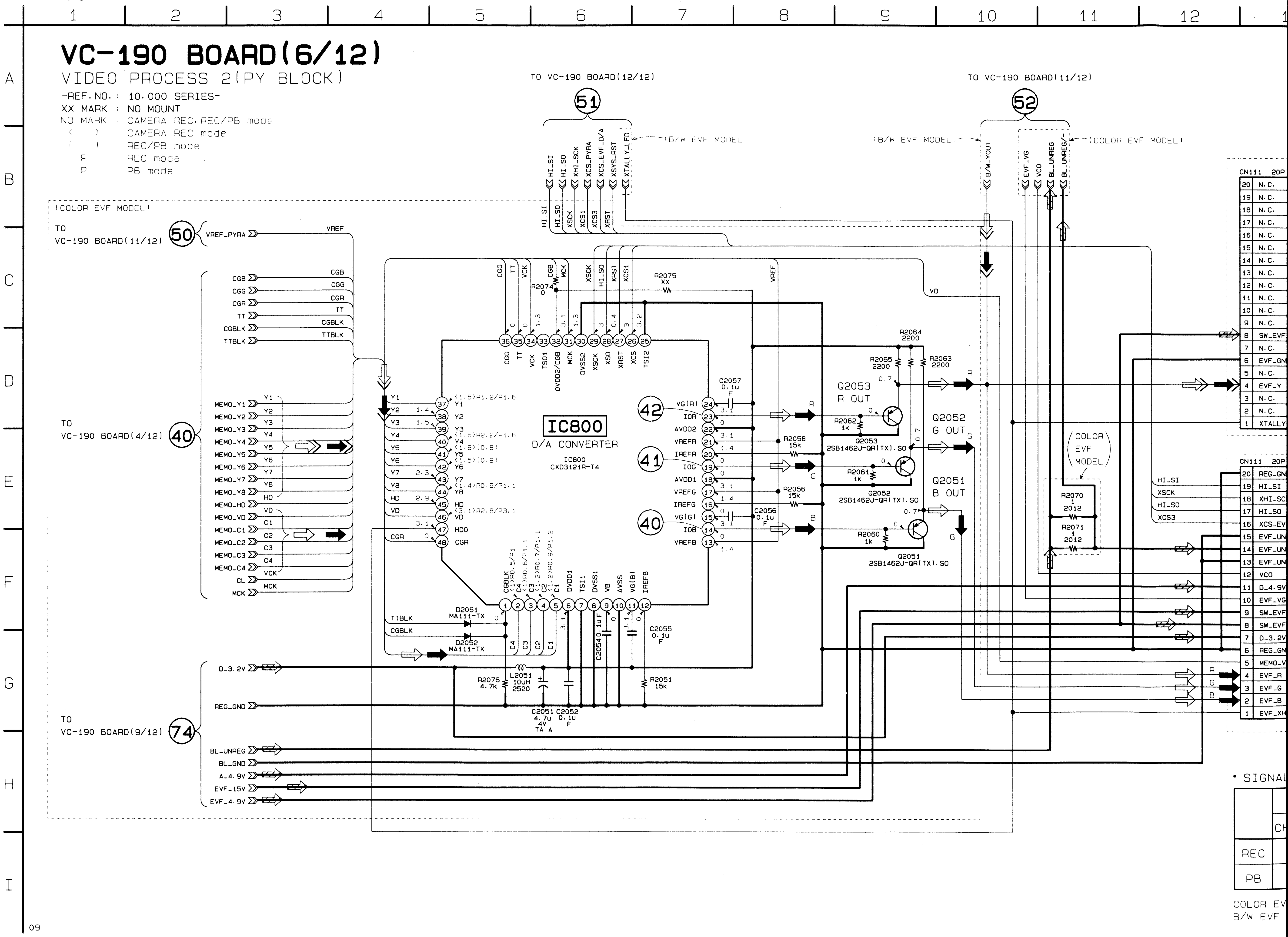
• SIGNAL PATH

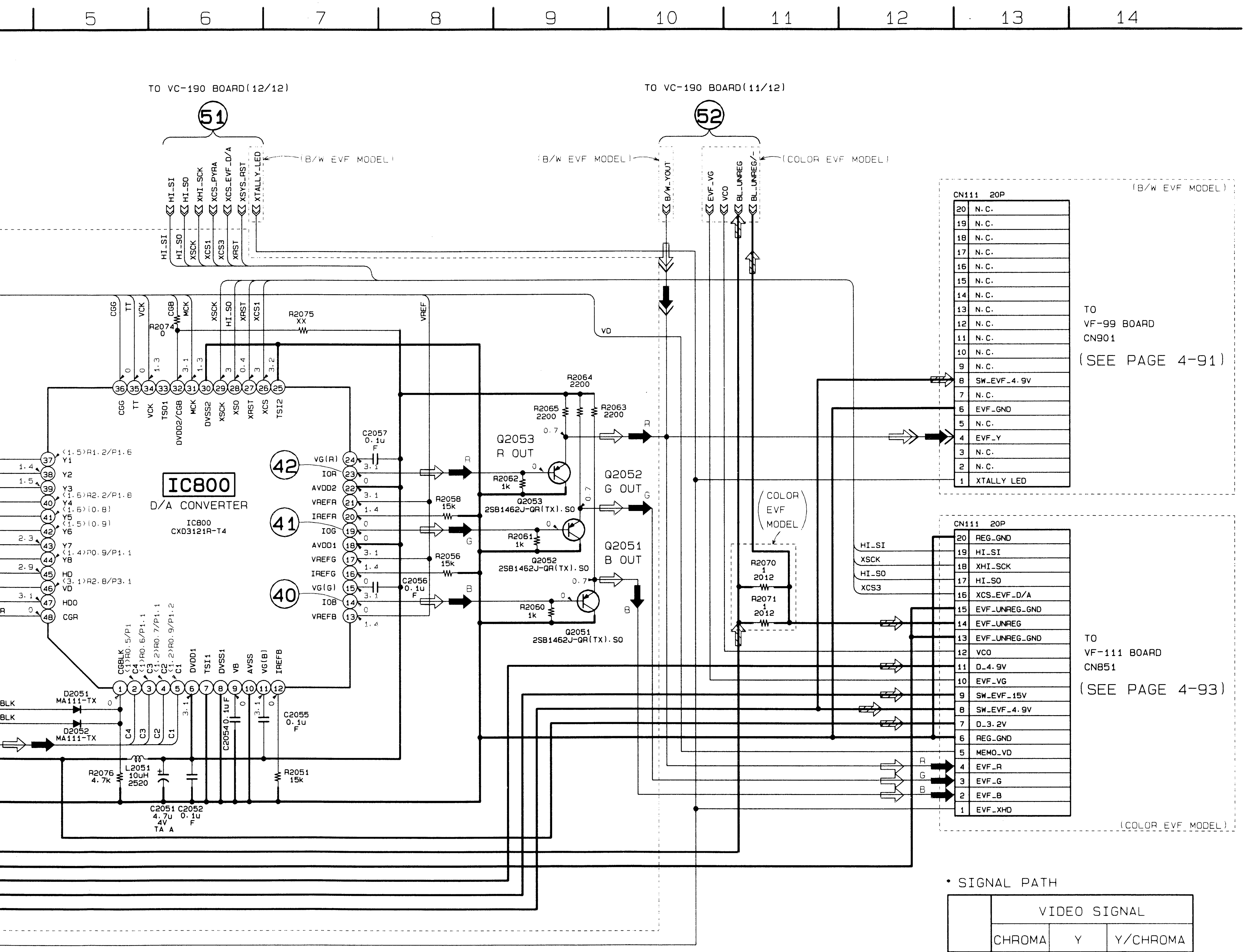
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇒	
PB		⇨	

NTSC MODEL: CCD-TR930

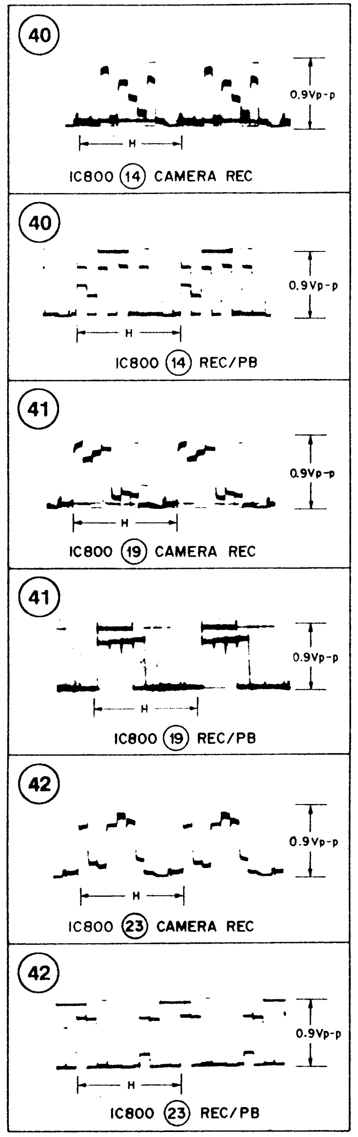
VIDEO PROCESS (1)
VC-190 (5/12)

- **For schematic diagrams.**
- Refer to page 4-15 for Printed Wiring Board.


1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H I
VC-190 BOARD(6/12)
VIDEO PROCESS 2(PY BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC,REC/PB mode
( ) : CAMERA REC mode
[ ] : REC/PB mode
R : REC mode
P : PB mode
TO VC-190 BOARD(12/12)
(51)
TO VC-190 BOARD(11/12)
(52)
(B/W EVF MODEL)
(COLOR EVF MODEL)
HI_SI
HI_SO
XHI_SCK
XCS_PYRA
XCS_EVF_D/A
XSYS_RST
XTALLY_LED
B/W_YOUT
EVF_VG
VCO
BL_UNREG
BL_UNREG/-
TO VC-190 BOARD(11/12)
(50)
VREF_PYRA
VREF
CGB
CGG
CGR
TT
CGBLK
TTBLK
TO VC-190 BOARD(4/12)
(40)
MEMO_Y1 … MEMO_Y8
MEMO_HD
MEMO_VD
MEMO_C1 … MEMO_C4
CL
MCK
VCK
IC800
D/A CONVERTER
IC800 CXD3121R-T4
Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 HD VD HDO CGR
CGG TT VCK TSO1 DVDD2/CGB MCK DVSS2 XSCK XSO XRST XCS TSI2
CGBLK C4 C3 C2 C1 DVDD1 TSI1 DVSS1 VB AVSS VG(B) IREFB
VG(R) IOR AVDD2 VREFR IREFR IOG AVDD1 VREFG IREFG VG(G) IOB VREFB
(42) (41) (40)
R2074 0
R2075 XX
C2057 0.1u F
C2056 0.1u F
C2055 0.1u F
C2054 0.1u F
R2058 15k
R2056 15k
R2064 2200
R2065 2200
R2063 2200
R2062 1k
R2061 1k
R2060 1k
Q2053 R OUT
Q2052 G OUT
Q2051 B OUT
Q2053 2SB1462J-QR(TX).SO
Q2052 2SB1462J-QR(TX).SO
Q2051 2SB1462J-QR(TX).SO
VD
COLOR EVF MODEL
R2070 1 2012
R2071 1 2012
D2051 MA111-TX
D2052 MA111-TX
L2051 10uH 2520
R2076 4.7k
R2051 15k
C2051 4.7u 4V TA A
C2052 0.1u F
TO VC-190 BOARD(9/12)
(74)
D_3.2V
REG_GND
BL_UNREG
BL_GND
A_4.9V
EVF_15V
EVF_4.9V
CN111 20P
20 N.C. 19 N.C. 18 N.C. 17 N.C. 16 N.C. 15 N.C. 14 N.C. 13 N.C. 12 N.C. 11 N.C. 10 N.C. 9 N.C. 8 SW_EVF 7 N.C. 6 EVF_GN 5 N.C. 4 EVF_Y 3 N.C. 2 N.C. 1 XTALLY
CN111 20P
20 REG_GN 19 HI_SI 18 XHI_SC 17 HI_SO 16 XCS_EV 15 EVF_UN 14 EVF_UN 13 EVF_UN 12 VCO 11 D_4.9V 10 EVF_VG 9 SW_EVF 8 SW_EVF 7 D_3.2V 6 REG_GN 5 MEMO_V 4 EVF_R 3 EVF_G 2 EVF_B 1 EVF_XH
HI_SI XSCK HI_SO XCS3
R G B
• SIGNAL
REC
PB
COLOR EV
B/W EVF
09


5
6
7
8
9
10
11
12
13
14
TO VC-190 BOARD(12/12)
51
HI_SI
HI_SO
XHI_SCK
XCS_PYRA
XCS_EVF_D/A
XSYS_RST
XTALLY_LED
(B/W EVF MODEL)
TO VC-190 BOARD(11/12)
52
(B/W EVF MODEL)
B/W_YOUT
EVF_VG
VCO
BL_UNREG
BL_UNREG/-
(COLOR EVF MODEL)
HI_SI
HI_SO
XSCK
XCS1
XCS3
XRST
CGG
TT
VCK
CGB
MCK
XSCK
HI_SO
XRST
XCS1
R2074
0
R2075
XX
VREF
VD
IC800
D/A CONVERTER
IC800
CXD3121R-T4
CGG
TT
VCK
TSO1
DVDD2/CGB
MCK
DVSS2
XSCK
XSO
XRST
XCS
TSI2
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Y8
HD
VD
HD0
CGR
VG(R)
IOR
AVDD2
VREFR
IREFR
IOG
AVDD1
VREFG
IREFG
VG(G)
IOB
VREFB
CGBLK
C4
C3
C2
C1
DVDD1
TSI1
DVSS1
VB
AVSS
VG(B)
IREFB
42
41
40
C2057
0.1u
F
R2058
15k
R2056
15k
C2056
0.1u
F
R2064
2200
R2065
2200
R2063
2200
Q2053
R OUT
R2062
1k
Q2053
2SB1462J-QR(TX).SO
R2061
1k
Q2052
2SB1462J-QR(TX).SO
Q2052
G OUT
Q2051
B OUT
R2060
1k
Q2051
2SB1462J-QR(TX).SO
R
G
B
(COLOR EVF MODEL)
R2070
1
2012
R2071
1
2012
D2051
MA111-TX
D2052
MA111-TX
BLK
BLK
R2076
4.7k
L2051
10uH
2520
C2051
4.7u
4V
TA A
C2052
0.1u
F
C2054 0.1uF
C2055
0.1u
F
R2051
15k
HI_SI
XSCK
HI_SO
XCS3
(B/W EVF MODEL)
CN111 20P
20 N.C.
19 N.C.
18 N.C.
17 N.C.
16 N.C.
15 N.C.
14 N.C.
13 N.C.
12 N.C.
11 N.C.
10 N.C.
9 N.C.
8 SW_EVF_4.9V
7 N.C.
6 EVF_GND
5 N.C.
4 EVF_Y
3 N.C.
2 N.C.
1 XTALLY LED
TO
VF-99 BOARD
CN901
(SEE PAGE 4-91)
CN111 20P
20 REG_GND
19 HI_SI
18 XHI_SCK
17 HI_SO
16 XCS_EVF_D/A
15 EVF_UNREG_GND
14 EVF_UNREG
13 EVF_UNREG_GND
12 VCO
11 D_4.9V
10 EVF_VG
9 SW_EVF_15V
8 SW_EVF_4.9V
7 D_3.2V
6 REG_GND
5 MEMO_VD
4 EVF_R
3 EVF_G
2 EVF_B
1 EVF_XHD
TO
VF-111 BOARD
CN851
(SEE PAGE 4-93)
(COLOR EVF MODEL)

VC-190 BOARD (PY BLOCK)
(COLOR EVF MODEL)



- SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	
PB	⇨	⇨	

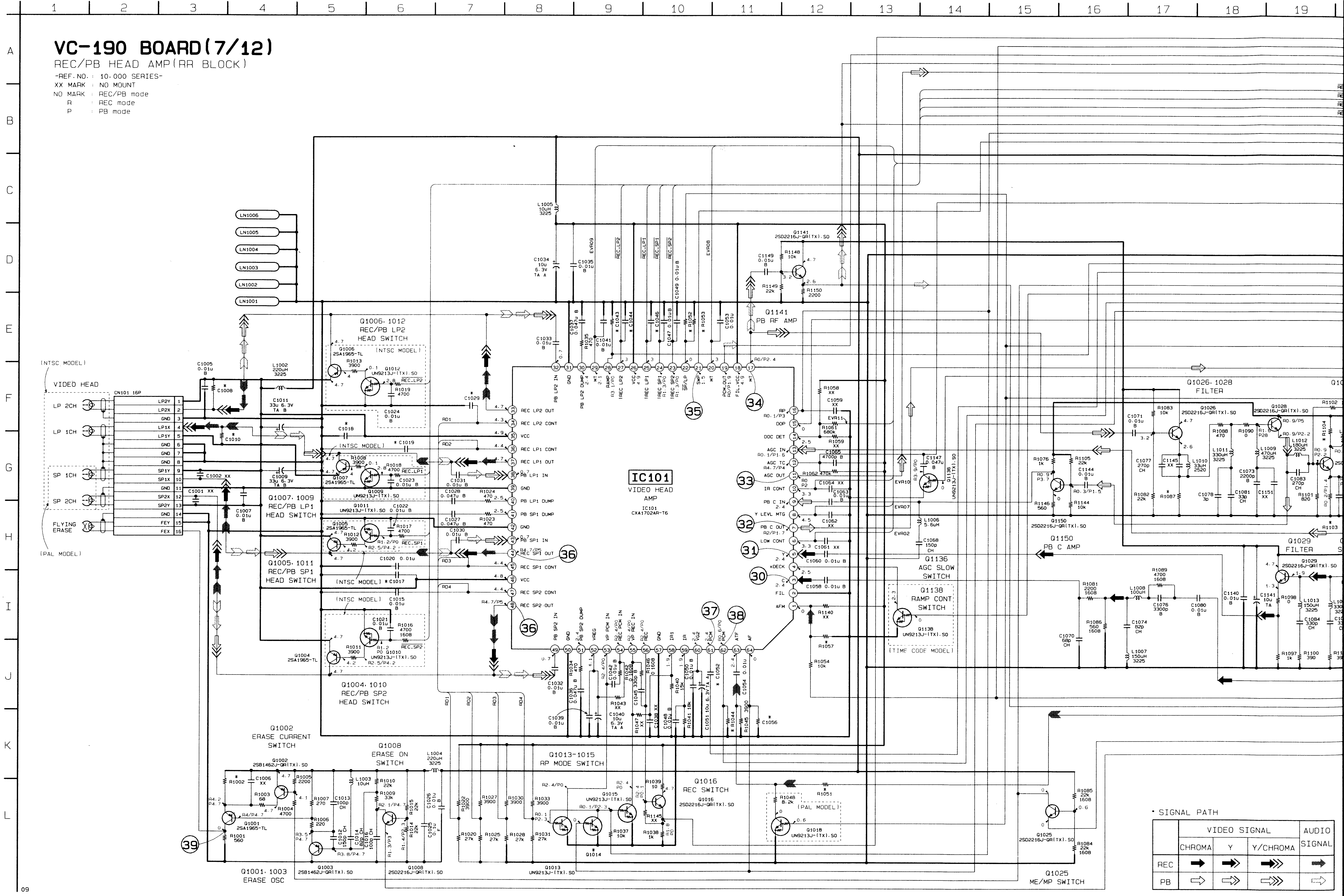
COLOR EVF MODEL:CCD-TR930/920E
B/W EVF MODEL:CCD-TR820E/TR825E

- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.

VC-190 BOARD (7/12)

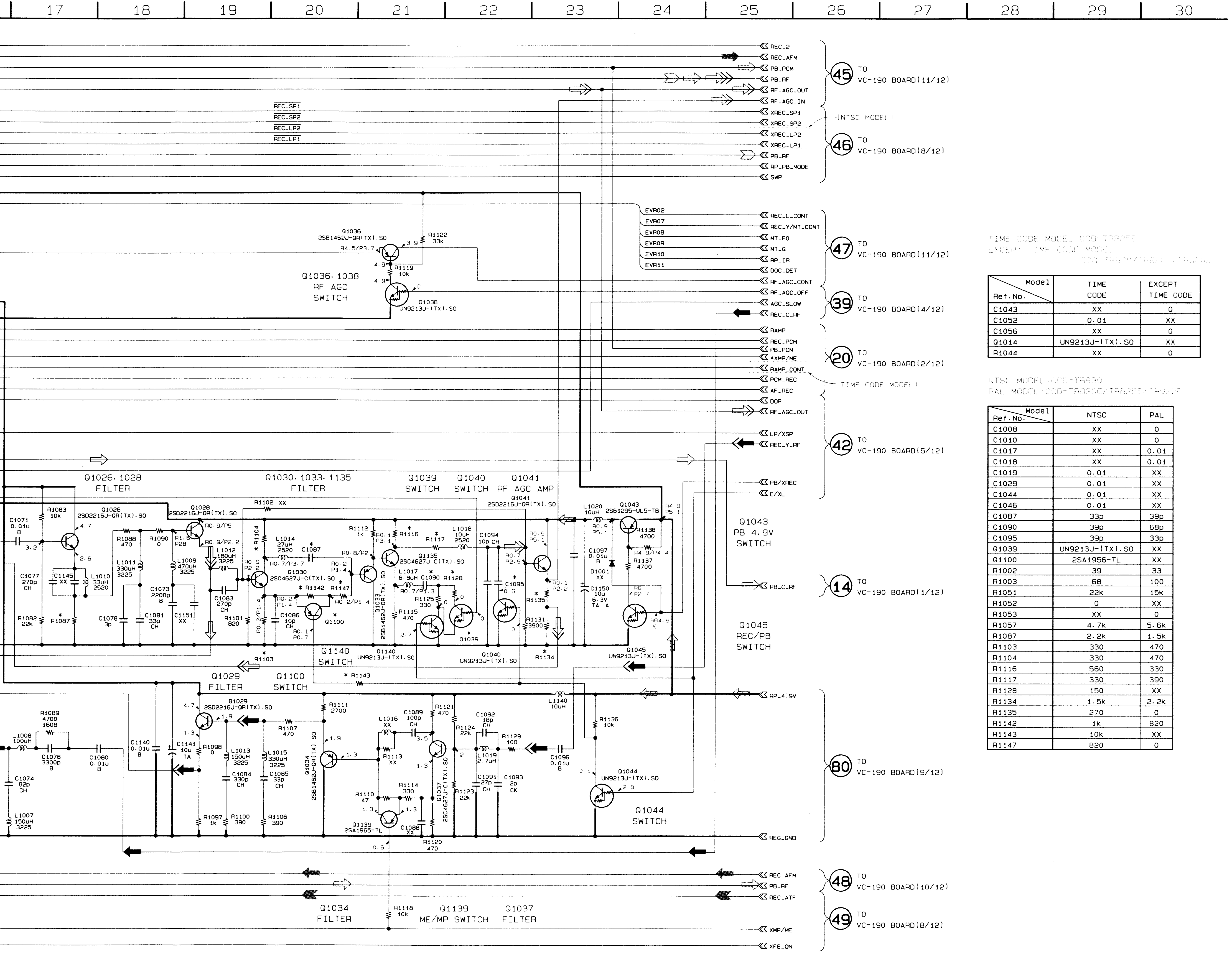
REC/PB HEAD AMP (RR BLOCK)

-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
A B C D E F G H I J K L
IC101
VIDEO HEAD AMP
IC101 CXA1702AR-T6
(NTSC MODEL)
VIDEO HEAD
LP 2CH
LP 1CH
SP 1CH
SP 2CH
FLYING ERASE
(PAL MODEL)
CN101 16P
LP2Y
LP2X
GND
LP1X
LP1Y
GND
GND
GND
SP1Y
SP1X
GND
SP2X
SP2Y
GND
FEY
FEX
LN1006
LN1005
LN1004
LN1003
LN1002
LN1001
L1002 220uH 3225
L1005 10uH 3225
C1005 0.01u B
C1008
C1010
C1011 33u 6.3V TA B
C1009 33u 6.3V TA B
C1002 XX
C1001 XX
C1007 0.01u B
Q1006, 1012 REC/PB LP2 HEAD SWITCH
Q1006 2SA1965-TL
Q1012 UN9213J-(TX).SO
R1013 3900
R1019 4700
C1024 0.01u B
C1018
C1019
R1008 3900
R1018 4700
Q1007 2SA1965-TL
Q1009 UN9213J-(TX).SO
C1023 0.01u B
Q1007, 1009 REC/PB LP1 HEAD SWITCH
Q1011 UN9213J-(TX).SO
C1022 0.01u B
Q1005 2SA1965-TL
R1012 3900
R1017 4700
Q1005, 1011 REC/PB SP1 HEAD SWITCH
C1020 0.01u
C1017
C1015 0.01u B
C1021 0.01u B
R1016 4700 1608
R1011 3900
Q1010 UN9213J-(TX).SO
Q1004 2SA1965-TL
Q1004, 1010 REC/PB SP2 HEAD SWITCH
REC.LP2
REC.LP1
REC.SP1
REC.SP2
RD1
RD2
RD3
RD4
C1029
C1031 0.01u B
C1028 0.047u B
R1024 470
C1027 0.047u B
R1023 470
C1030 0.01u B
C1033 0.01u B
C1034 10u 6.3V TA A
C1035 0.01u B
C1037 0.047u B
R1035 470
C1041 0.01u B
C1043
C1044
C1046
C1047 0.01u B
C1049 0.01u B
R1052
R1053
C1053 0.01u
EVR09
EVR08
REC.LP2
REC.LP1
REC.SP1
REC.SP2
PB LP2 IN
GND
PB LP2 DUMP
MT
RAMP
VCC
REC LP2
IREC LP1
IREC SP1
IREC SP2
SP/LP
SWP
PCM.OUT
FIL.VCC
MT
REC LP2 OUT
REC LP2 CONT
VCC
REC LP1 CONT
REC LP1 OUT
PB LP1 IN
GND
PB LP1 DUMP
PB SP1 DUMP
GND
PB SP1 IN
REC SP1 OUT
REC SP1 CONT
VCC
REC SP2 CONT
REC SP2 OUT
PB SP2 IN
GND
PB SP2 DUMP
VREG
VP PCM IN
REC PCM IN
REC
GND
IR
IR1
PCM
ATF
AF
RP
DOP
DOC DET
AGC IN
AGC TC
AGC OUT
IR CONT
PB C IN
Y LEVL MTG
PB C OUT
LOW CONT
Y
XDECK
C
FIL
AFM
C1032 0.01u B
C1036 0.047u B
C1039 0.01u B
C1040 10u 6.3V TA A
C1042 0.01u B
C1045 330p
R1043 XX
R1047 XX
C1038 XX
R1046 10 1608
C1048 0.01u B
R1040 15k
R1041 18k
C1050 0.01u B
C1051 10u 6.3V TA A
C1052
R1044
R1045 3900
C1054 0.01u
C1056
Q1141 2SD2216J-QR(TX).SO
C1149 0.01u B
R1148 10k
R1149 22k
R1150 2200
Q1141 PB RF AMP
R1058 XX
C1059 XX
EVR11
R1061 680k
R1059 XX
C1065 4700p B
R1062 470k
C1064 XX
C1063 0.01u B
C1062 XX
C1061 XX
C1060 0.01u B
C1058 0.01u B
R1140 XX
R1057
R1054 10k
C1147 0.047u B
Q1136 UN9213J-(TX).SO
EVR10
EVR07
EVR02
L1006 5.6uH
C1068 150p CH
Q1136 AGC SLOW SWITCH
Q1138 RAMP CONT SWITCH
Q1138 UN9213J-(TX).SO
(TIME CODE MODEL)
Q1026, 1028 FILTER
C1071 0.01u B
R1083 10k
Q1026 2SD2216J-QR(TX).SO
Q1028 2SD2216J-QR(TX).SO
R1088 470
R1090 0
R1089 P28
L1011 330uH 3225
L1012 180uH 3225
L1009 470uH 3225
R1104
R1102
C1077 270p CH
C1145 XX
L1010 33uH 2520
C1073 2200p B
C1083 270p CH
R1101 820
R1082 22k
R1087
C1078 3p
C1081 33p CH
C1151 XX
R1076 1k
R1105 22k
C1144 0.01u B
R1146 560
R1144 10k
Q1150 2SD2216J-QR(TX).SO
Q1150 PB C AMP
R1103
Q1029 FILTER
Q1029 2SD2216J-QR(TX).SO
R1089 4700 1608
R1081 2200 1608
L1008 100uH
C1076 3300p B
C1080 0.01u B
C1140 0.01u B
C1141 10u TA
R1098 0
L1013 150uH 3225
R1086 560 1608
C1074 82p CH
C1084 330p CH
C1070 68p CH
L1007 150uH 3225
R1097 1k
R1100 390
Q1002 ERASE CURRENT SWITCH
Q1002 2SB1462J-QR(TX).SO
R1002
C1006 XX
R1005 2200
R1003 68
R1004 4700
Q1001 2SA1965-TL
R1001 560
Q1001, 1003 ERASE OSC
Q1008 ERASE ON SWITCH
L1004 220uH 3225
L1003 10uH
R1010 22k
R1009 33k
R1007 270
C1013 100p CH
R1006 220
C1012 150p CH
C1014 82p CH
C1016 100p CH
R1015 22k
R1014 22k
C1026 0.01u B
C1025 0.01u F
Q1003 2SB1462J-QR(TX).SO
Q1008 2SD2216J-QR(TX).SO
R1022 3900
R1027 3900
R1030 3900
R1033 3900
R1020 27k
R1025 27k
R1028 27k
R1031 27k
Q1013-1015 RP MODE SWITCH
Q1015 UN9213J-(TX).SO
R1039 10
R1037 10k
R1038 1k
R1145 XX
Q1014
Q1013 UN9213J-(TX).SO
Q1016 REC SWITCH
Q1016 2SD2216J-QR(TX).SO
R1048 8.2k
R1051
(PAL MODEL)
Q1018 UN9213J-(TX).SO
R1085 22k 1608
R1084 22k 1608
Q1025 2SD2216J-QR(TX).SO
Q1025 ME/MP SWITCH
(30)
(31)
(32)
(33)
(34)
(35)
(36)
(37)
(38)
(39)
09

· SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨


17
18
19
20
21
22
23
24
25
26
27
28
29
30
REC_2
REC_AFM
PB_PCM
PB_RF
RF_AGC_OUT
RF_AGC_IN
45 TO VC-190 BOARD(11/12)
REC_SP1
REC_SP2
REC_LP2
REC_LP1
XREC_SP1
XREC_SP2
XREC_LP2
XREC_LP1
PB_RF
RP_PB_MODE
SWP
INTSC MODEL
46 TO VC-190 BOARD(8/12)
EVR02
EVR07
EVR08
EVR09
EVR10
EVR11
REC_L_CONT
REC_Y/MT_CONT
MT_FO
MT_Q
RP_IR
DOC_DET
RF_AGC_CONT
RF_AGC_OFF
AGC_SLOW
REC_C_RF
47 TO VC-190 BOARD(11/12)
39 TO VC-190 BOARD(4/12)
RAMP
REC_PCM
PB_PCM
XMP/ME
RAMP_CONT
PCM_REC
AF_REC
DOP
RF_AGC_OUT
20 TO VC-190 BOARD(2/12)
(TIME CODE MODEL)
LP/XSP
REC_Y_RF
PB/XREC
E/XL
42 TO VC-190 BOARD(5/12)
Q1036, 1038 RF AGC SWITCH
Q1026, 1028 FILTER
Q1030, 1033, 1135 FILTER
Q1039 SWITCH
Q1040 SWITCH
Q1041 RF AGC AMP
Q1043 PB 4.9V SWITCH
Q1045 REC/PB SWITCH
PB_C_RF
14 TO VC-190 BOARD(1/12)
Q1140 SWITCH
Q1029 FILTER
Q1100 SWITCH
RP_4.9V
80 TO VC-190 BOARD(9/12)
Q1044 SWITCH
REG_GND
REC_AFM
PB_RF
REC_ATF
48 TO VC-190 BOARD(10/12)
XMP/ME
XFE_ON
49 TO VC-190 BOARD(8/12)
Q1034 FILTER
Q1139 ME/MP SWITCH
Q1037 FILTER

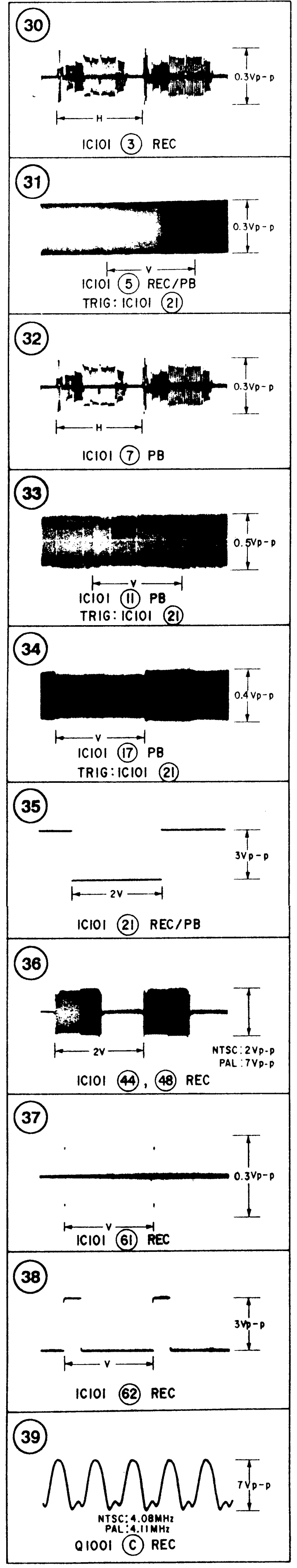
TIME CODE MODEL : CCD-TR825E
EXCEPT TIME CODE MODEL :
CCD-TR820E/TR920E/TR930

Model / Ref. No.	TIME CODE	EXCEPT TIME CODE
C1043	XX	0
C1052	0.01	XX
C1056	XX	0
Q1014	UN9213J-(TX).SO	XX
R1044	XX	0

NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

Model / Ref. No.	NTSC	PAL
C1008	XX	0
C1010	XX	0
C1017	XX	0.01
C1018	XX	0.01
C1019	0.01	XX
C1029	0.01	XX
C1044	0.01	XX
C1046	0.01	XX
C1087	33p	39p
C1090	39p	68p
C1095	39p	33p
Q1039	UN9213J-(TX).SO	XX
Q1100	2SA1956-TL	XX
R1002	39	33
R1003	68	100
R1051	22k	15k
R1052	0	XX
R1053	XX	0
R1057	4.7k	5.6k
R1087	2.2k	1.5k
R1103	330	470
R1104	330	470
R1116	560	330
R1117	330	390
R1128	150	XX
R1134	1.5k	2.2k
R1135	270	0
R1142	1k	820
R1143	10k	XX
R1147	820	0

VC-190 BOARD (RR BLOCK)



・SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

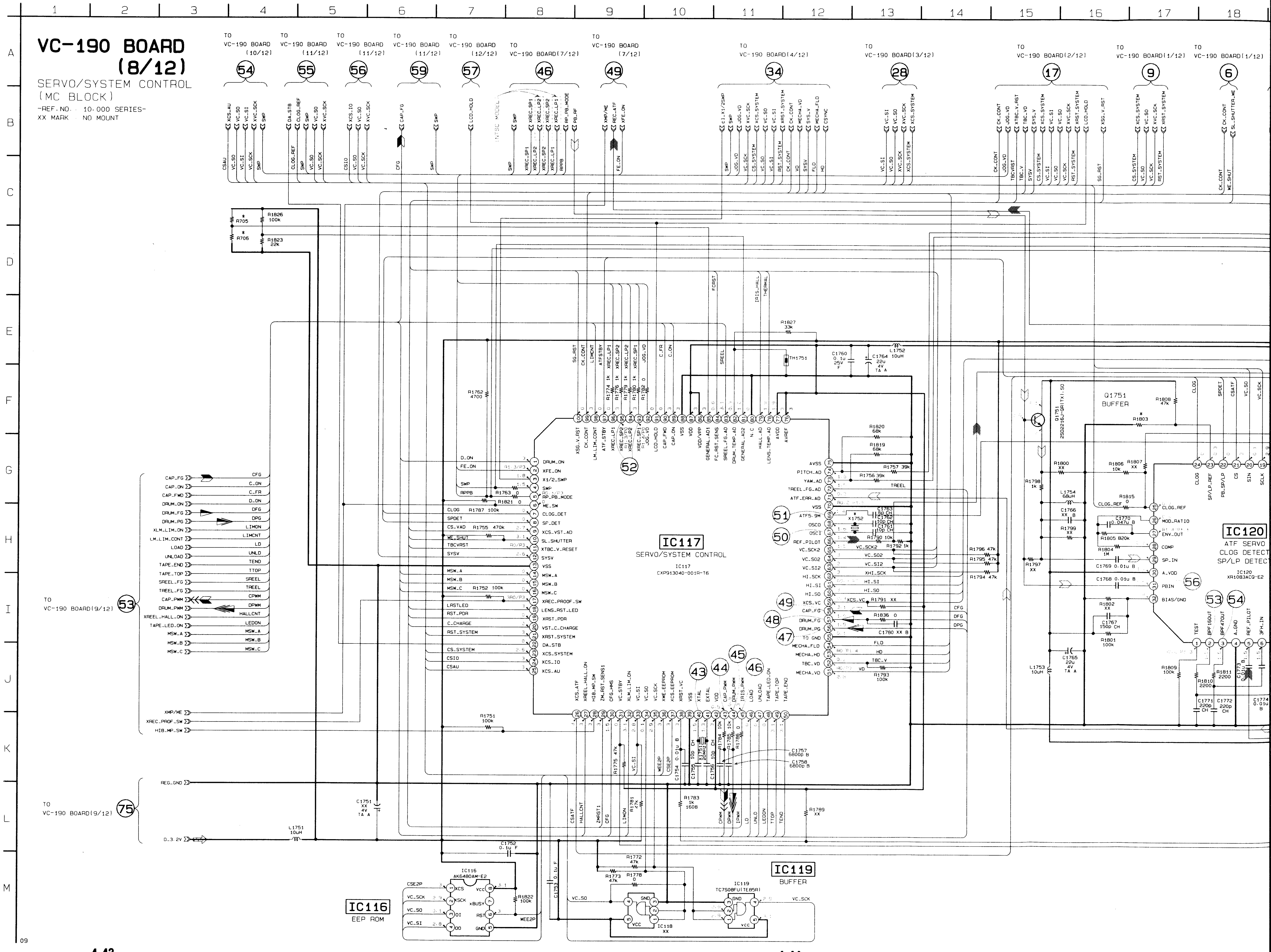
・SIGNAL PATH

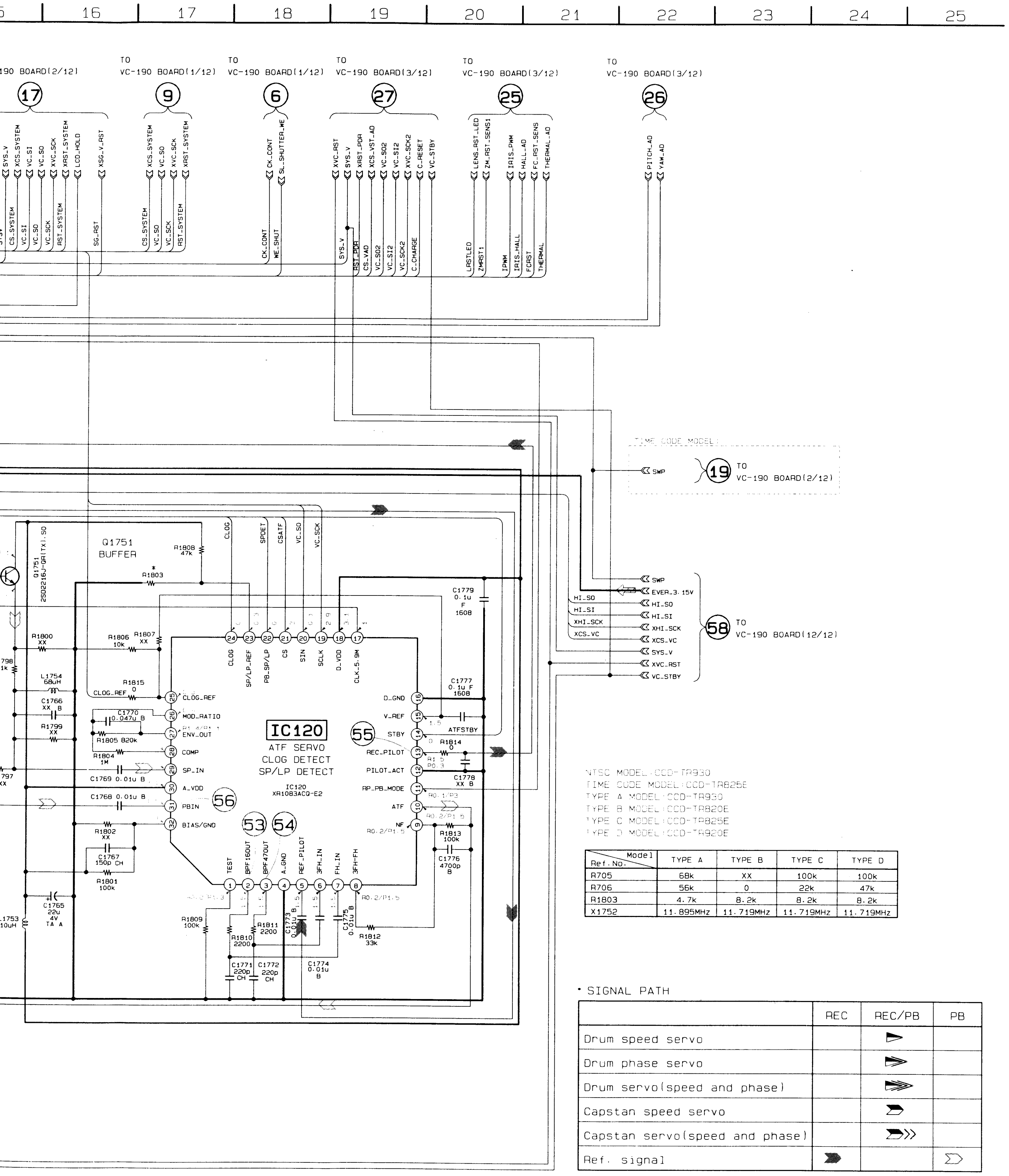
	REC	REC/PB	PB
Ref. signal	▶		▷

REC/PB HEAD AMP

VC-190 (7/12)

- For schematic diagrams.
- Refer to page 4–15 for Printed Wiring Board.


VC-190 BOARD
(8/12)
SERVO/SYSTEM CONTROL
(MC BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
TO VC-190 BOARD(10/12)
TO VC-190 BOARD(11/12)
TO VC-190 BOARD(12/12)
TO VC-190 BOARD(7/12)
TO VC-190 BOARD(4/12)
TO VC-190 BOARD(3/12)
TO VC-190 BOARD(2/12)
TO VC-190 BOARD(1/12)
TO VC-190 BOARD(9/12)
IC117
SERVO/SYSTEM CONTROL
IC117
CXP913040-001R-T6
IC120
ATF SERVO
CLOG DETECT
SP/LP DETECT
IC120
XR1083ACQ-E2
IC116
EEP ROM
IC116
AK6480AM-E2
IC119
BUFFER
IC119
TC7S08FU(TE85R)
IC118
XX
Q1751
BUFFER
Q1751
2SD2216J-QR(TX).SO


16
17
18
19
20
21
22
23
24
25
190 BOARD(2/12)
⑰
SYS_V
XCS_SYSTEM
VC_SI
VC_SO
XVC_SCK
XRST_SYSTEM
LCD_HOLD
XSG_V_RST
CS_SYSTEM
RST_SYSTEM
SG_RST
TO
VC-190 BOARD(1/12)
⑨
XCS_SYSTEM
VC_SO
XVC_SCK
XRST_SYSTEM
TO
VC-190 BOARD(1/12)
⑥
CK_CONT
SL_SHUTTER_WE
WE_SHUT
TO
VC-190 BOARD(3/12)
㉗
XVC_RST
SYS_V
XRST_PDR
XCS_VST_AD
VC_SO2
VC_SI2
XVC_SCK2
C_RESET
VC_STBY
RST_PDR
CS_VAD
C_CHARGE
TO
VC-190 BOARD(3/12)
㉕
LENS_RST_LED
ZM_RST_SENS1
IRIS_PWM
HALL_AD
FC_RST_SENS
THERMAL_AD
LRSTLED
ZMRST1
IPWM
IRIS_HALL
FCRST
THERMAL
TO
VC-190 BOARD(3/12)
㉖
PITCH_AD
YAW_AD
TIME CODE MODEL
SWP
⑲
TO
VC-190 BOARD(2/12)
SWP
EVER_3.15V
HI_SO
HI_SI
XHI_SCK
XCS_VC
SYS_V
XVC_RST
VC_STBY
㊳
TO
VC-190 BOARD(12/12)
Q1751
BUFFER
Q1751
2SD2216J-QR(TX).SO
R1808
47k
*
R1803
R1800
XX
R1806
10k
R1807
XX
L1754
68uH
C1766
XX B
R1799
XX
R1815
0
CLOG_REF
C1770
0.047u B
R1805 820k
R1804
1M
C1769 0.01u B
C1768 0.01u B
R1802
XX
C1767
150p CH
R1801
100k
C1765
22u
4V
TA A
L1753
10uH
CLOG
SPDET
CSATF
VC_SO
VC_SCK
IC120
ATF SERVO
CLOG DETECT
SP/LP DETECT
IC120
XR1083ACQ-E2
CLOG_REF
MOD_RATIO
ENV_OUT
COMP
SP_IN
A_VDD
PBIN
BIAS/GND
CLOG
SP/LP_REF
PB_SP/LP
CS
SIN
SCLK
D_VDD
CLK_5.9M
D_GND
V_REF
STBY
REC_PILOT
PILOT_ACT
RP_PB_MODE
ATF
NF
TEST
BPF160OUT
BPF470OUT
A_GND
REF_PILOT
3FH_IN
FH_IN
3FH-FH
㊺
㊼
㊽
㊾
C1779
0.1u
F
1608
C1777
0.1u F
1608
ATFSTBY
R1814
0
C1778
XX B
R1813
100k
C1776
4700p
B
R1809
100k
R1810
2200
R1811
2200
C1773
0.01u B
C1775
0.01u B
R1812
33k
C1771
220p
CH
C1772
220p
CH
C1774
0.01u
B
R0.2/P1.5
R0.1/P3

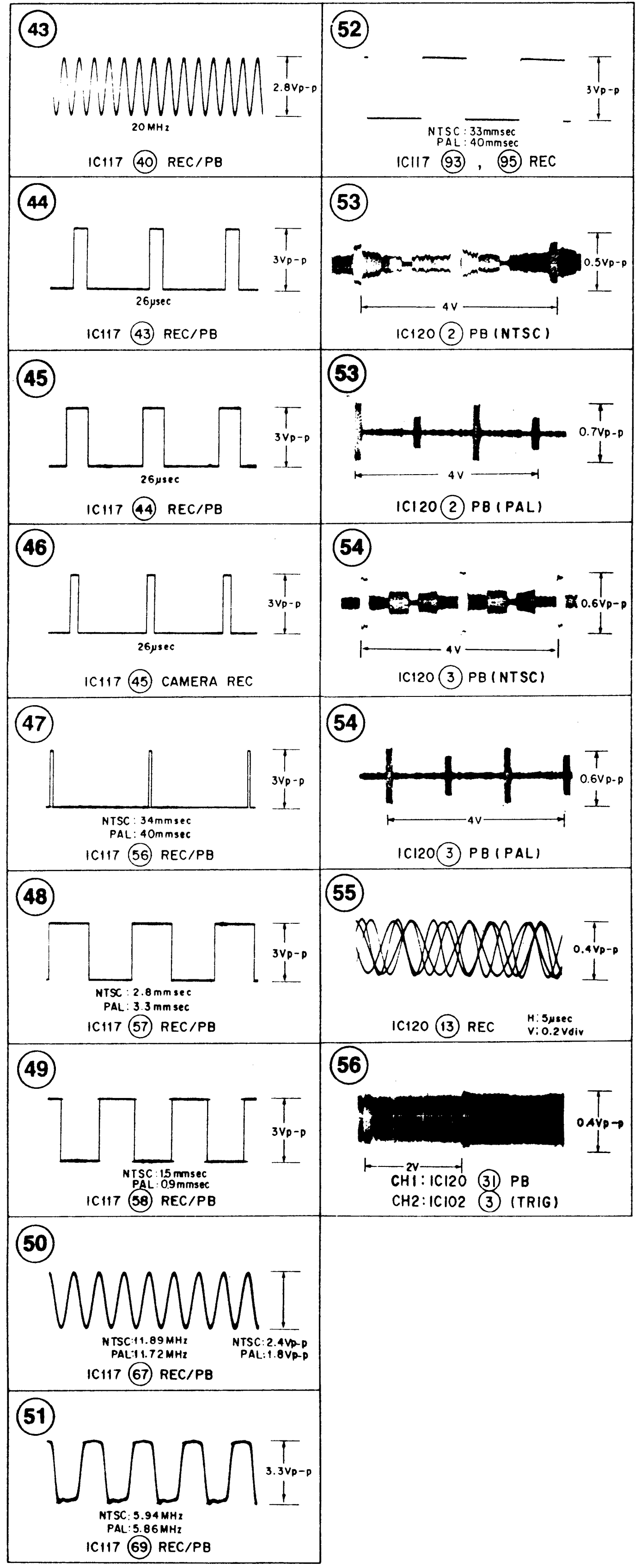
NTSC MODEL:CCD-TR930
TIME CODE MODEL:CCD-TR825E
TYPE A MODEL:CCD-TR930
TYPE B MODEL:CCD-TR820E
TYPE C MODEL:CCD-TR825E
TYPE D MODEL:CCD-TR920E

Model / Ref. No.	TYPE A	TYPE B	TYPE C	TYPE D
R705	68k	XX	100k	100k
R706	56k	0	22k	47k
R1803	4.7k	8.2k	8.2k	8.2k
X1752	11.895MHz	11.719MHz	11.719MHz	11.719MHz

- SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷≫	
Drum servo(speed and phase)		▷⋙	
Capstan speed servo		➢	
Capstan servo(speed and phase)		➢››	
Ref. signal	➤		⇨

VC-190 BOARD (MC BLOCK)

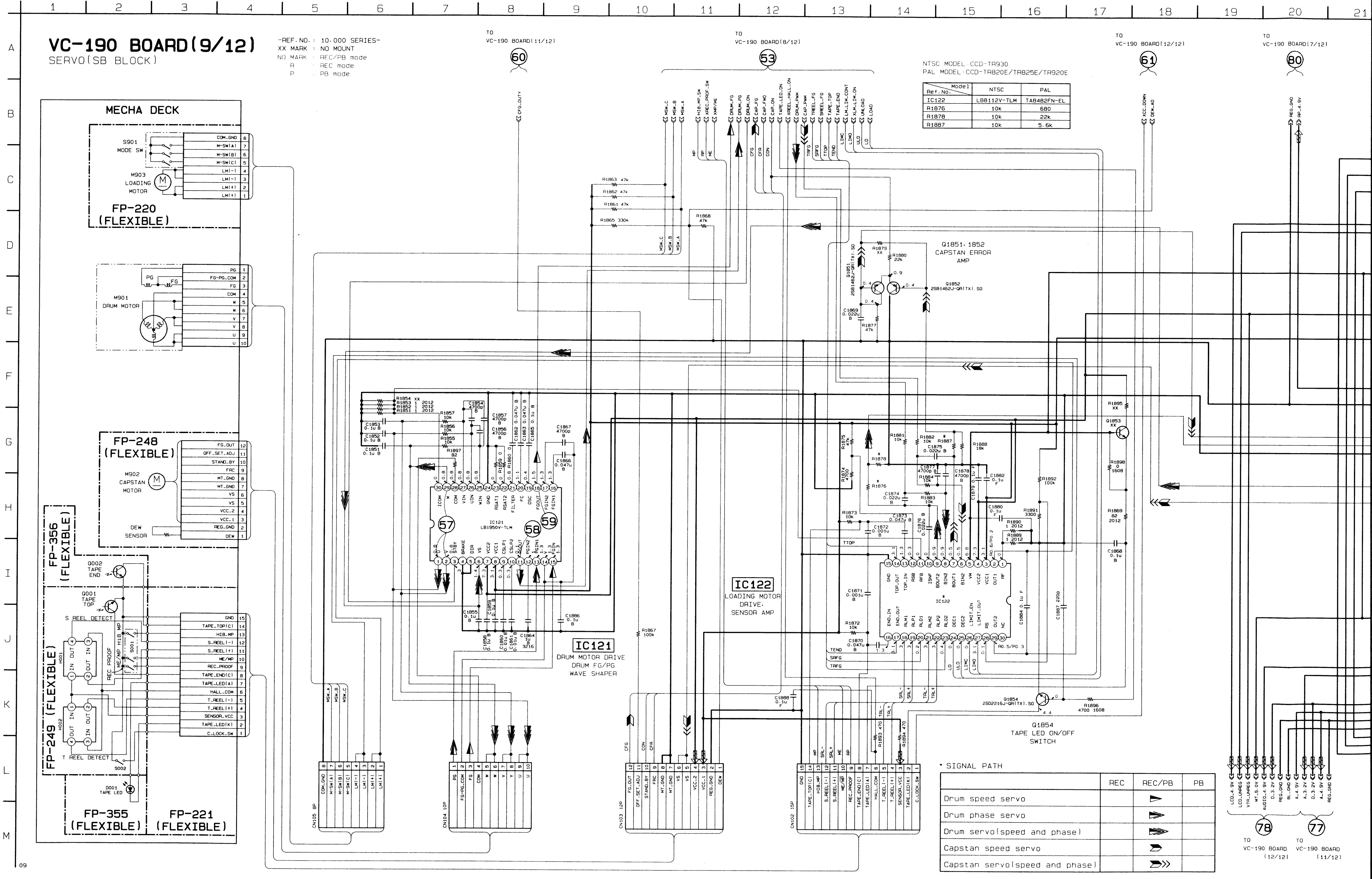


- For schematic diagrams.
- Refer to page 4–15 for Printed Wiring Board.

VC-190 BOARD(9/12)

SERVO(SB BLOCK)

-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode

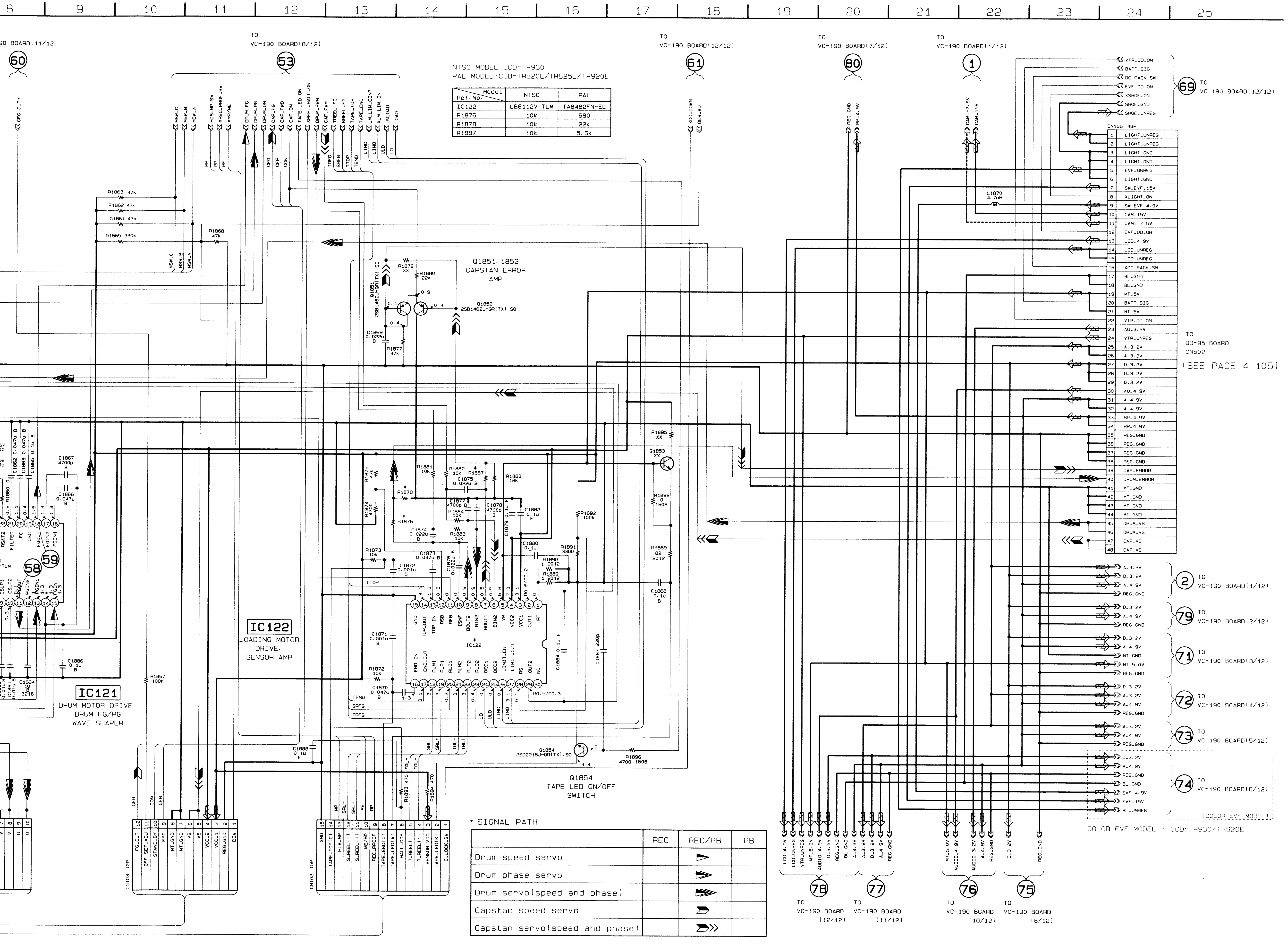

MECHA DECK
S901 MODE SW
M903 LOADING MOTOR
FP-220 (FLEXIBLE)
M901 DRUM MOTOR
FP-248 (FLEXIBLE)
M902 CAPSTAN MOTOR
DEW SENSOR
FP-356 (FLEXIBLE)
Q002 TAPE END
Q001 TAPE TOP
S REEL DETECT
T REEL DETECT
H001
H002
S001
S002
D001 TAPE LED
FP-249 (FLEXIBLE)
FP-355 (FLEXIBLE)
FP-221 (FLEXIBLE)
TO VC-190 BOARD(11/12) 60
TO VC-190 BOARD(8/12) 53
TO VC-190 BOARD(12/12) 61
TO VC-190 BOARD(7/12) 80
IC121 LB1950V-TLM
IC121 DRUM MOTOR DRIVE DRUM FG/PG WAVE SHAPER
IC122 LOADING MOTOR DRIVE, SENSOR AMP
Q1851, 1852 CAPSTAN ERROR AMP
Q1851 2SB1462J-QR(TX).SO
Q1852 2SB1462J-QR(TX).SO
Q1853
Q1854 2SD2216J-QR(TX).SO
Q1854 TAPE LED ON/OFF SWITCH
CN105 8P
CN104 10P
CN103 12P
CN102 15P
TO VC-190 BOARD(12/12) 78
TO VC-190 BOARD(11/12) 77

NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

Model / Ref. No.	NTSC	PAL
IC122	LB8112V-TLM	TA8482FN-EL
R1876	10k	680
R1878	10k	22k
R1887	10k	5.6k

- SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶▶	
Drum servo(speed and phase)		▶▶▶	
Capstan speed servo		➤	
Capstan servo(speed and phase)		➤»	


TO VC-190 BOARD(11/12) 60
TO VC-190 BOARD(8/12) 53
TO VC-190 BOARD(12/12) 61
TO VC-190 BOARD(7/12) 80
TO VC-190 BOARD(1/12) 1
TO VC-190 BOARD(12/12) 69
CN106 48P
TO DD-95 BOARD CN502 (SEE PAGE 4-105)
Q1851, 1852 CAPSTAN ERROR AMP
IC122 LOADING MOTOR DRIVE, SENSOR AMP
IC121 DRUM MOTOR DRIVE DRUM FG/PG WAVE SHAPER
Q1854 TAPE LED ON/OFF SWITCH
CN103 12P
CN102 15P
TO VC-190 BOARD(1/12) 2
TO VC-190 BOARD(2/12) 79
TO VC-190 BOARD(3/12) 71
TO VC-190 BOARD(4/12) 72
TO VC-190 BOARD(5/12) 73
TO VC-190 BOARD(6/12) 74
(COLOR EVF MODEL)
COLOR EVF MODEL : CCD-TR930/TR920E
TO VC-190 BOARD (12/12) 78
TO VC-190 BOARD (11/12) 77
TO VC-190 BOARD (10/12) 76
TO VC-190 BOARD (8/12) 75

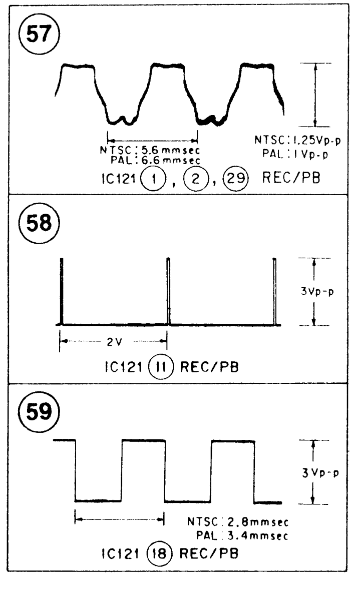
NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

Model / Ref. No.	NTSC	PAL
IC122	LB8112V-TLM	TA8482FN-EL
R1876	10k	680
R1878	10k	22k
R1887	10k	5.6k

• SIGNAL PATH

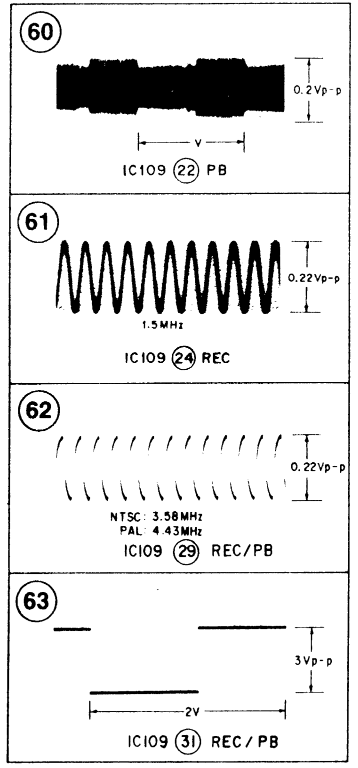
	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷>	
Drum servo(speed and phase)		▷>>	
Capstan speed servo		▶	
Capstan servo(speed and phase)		▶››	

VC-190 BOARD (SB BLOCK)



SERVO, TAPE SENSOR
VC-190 (9/12)

VC-190 BOARD (AU BLOCK)

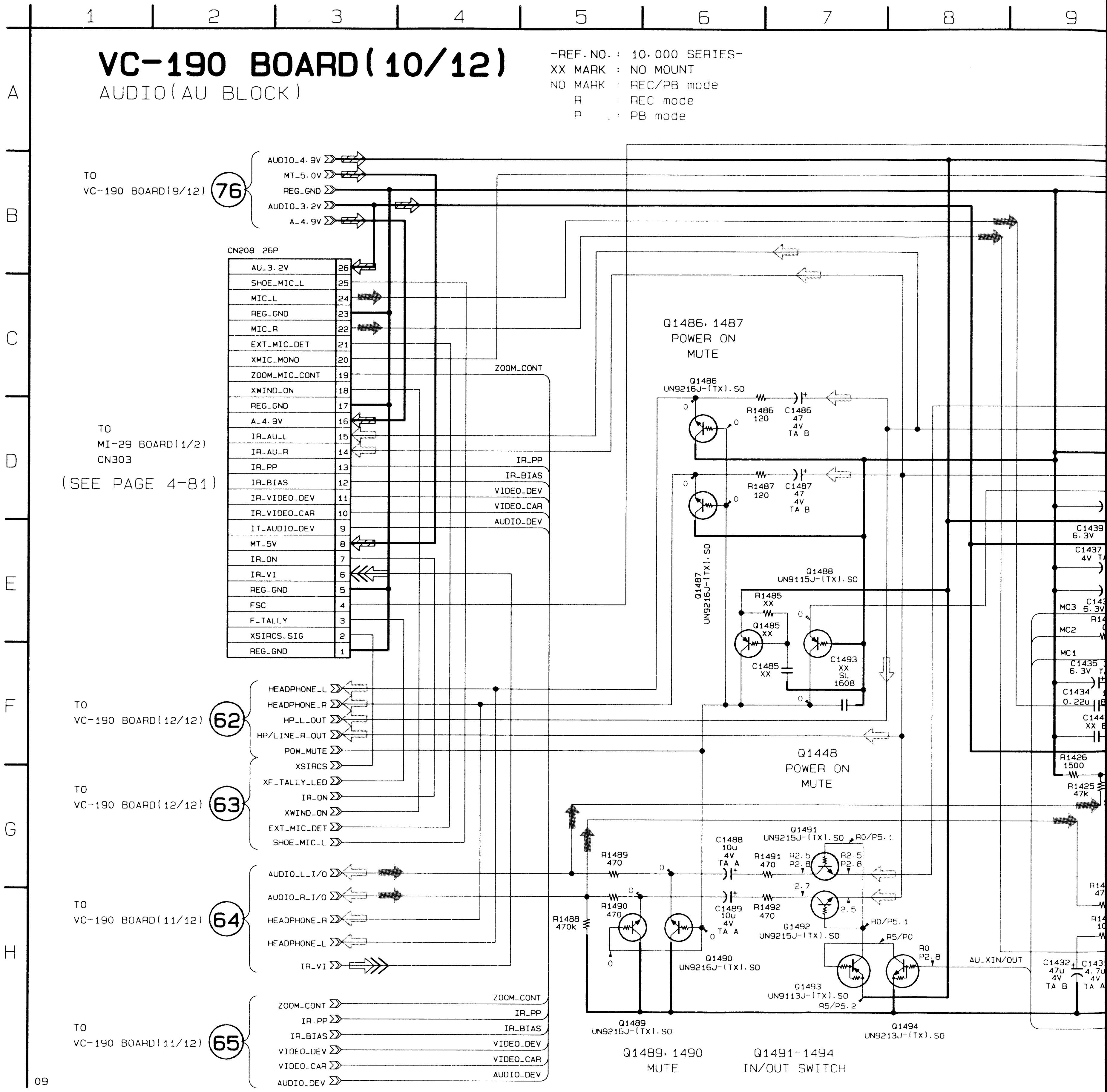


- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.

VC-190 BOARD(10/12)

AUDIO(AU BLOCK)

-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode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6
7
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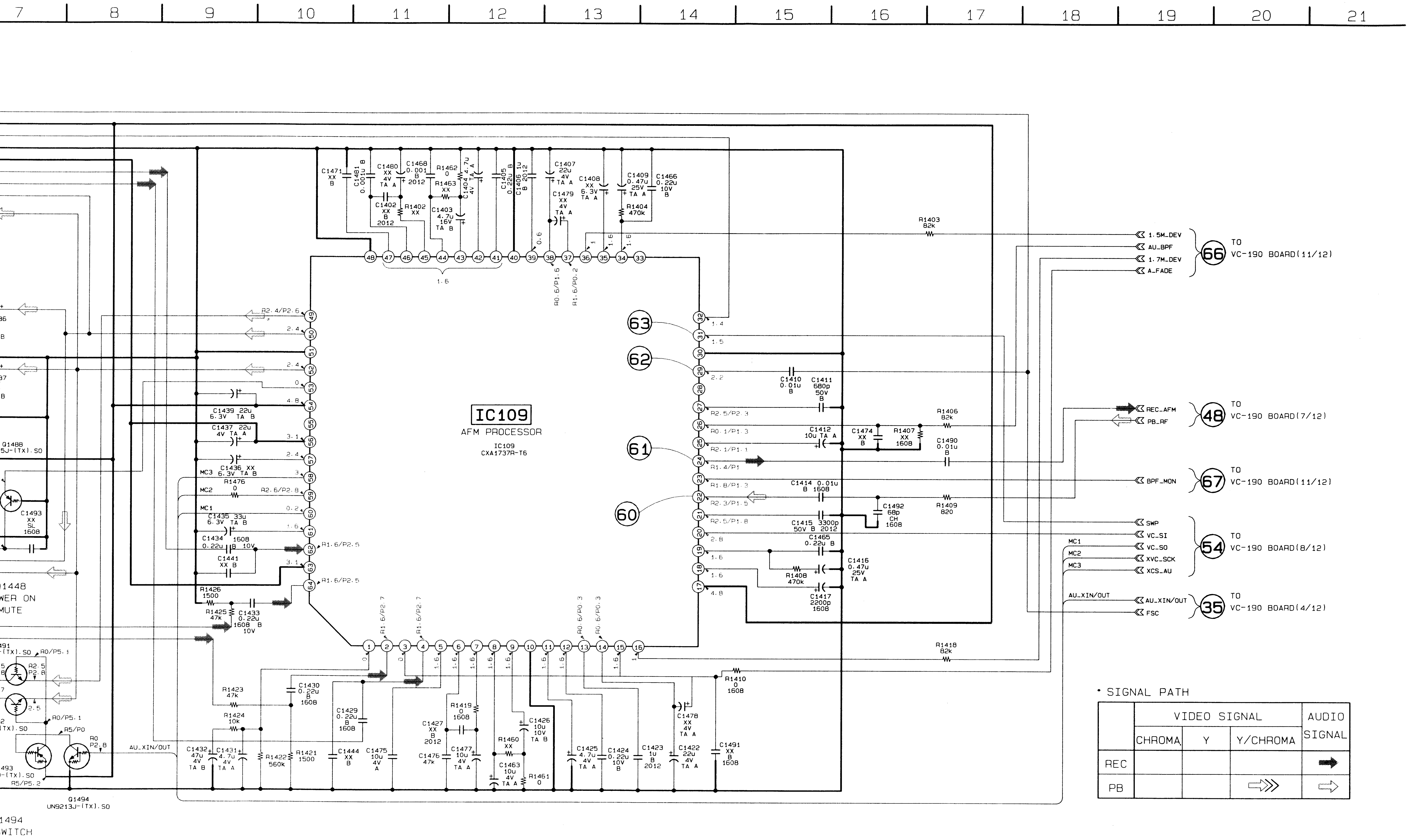
9
A
B
C
D
E
F
G
H
TO
VC-190 BOARD(9/12)
76
AUDIO_4.9V
MT_5.0V
REG_GND
AUDIO_3.2V
A_4.9V
CN208 26P
AU_3.2V 26
SHOE_MIC_L 25
MIC_L 24
REG_GND 23
MIC_R 22
EXT_MIC_DET 21
XMIC_MONO 20
ZOOM_MIC_CONT 19
XWIND_ON 18
REG_GND 17
A_4.9V 16
IR_AU_L 15
IR_AU_R 14
IR_PP 13
IR_BIAS 12
IR_VIDEO_DEV 11
IR_VIDEO_CAR 10
IT_AUDIO_DEV 9
MT_5V 8
IR_ON 7
IR_VI 6
REG_GND 5
FSC 4
F_TALLY 3
XSIRCS_SIG 2
REG_GND 1
TO
MI-29 BOARD(1/2)
CN303
(SEE PAGE 4-81)
ZOOM_CONT
IR_PP
IR_BIAS
VIDEO_DEV
VIDEO_CAR
AUDIO_DEV
TO
VC-190 BOARD(12/12)
62
HEADPHONE_L
HEADPHONE_R
HP_L_OUT
HP/LINE_R_OUT
POW_MUTE
XSIRCS
TO
VC-190 BOARD(12/12)
63
XF_TALLY_LED
IR_ON
XWIND_ON
EXT_MIC_DET
SHOE_MIC_L
TO
VC-190 BOARD(11/12)
64
AUDIO_L_I/O
AUDIO_R_I/O
HEADPHONE_R
HEADPHONE_L
IR_VI
TO
VC-190 BOARD(11/12)
65
ZOOM_CONT
IR_PP
IR_BIAS
VIDEO_DEV
VIDEO_CAR
AUDIO_DEV
Q1486, 1487
POWER ON
MUTE
Q1486
UN9216J-(TX).SO
R1486 120
C1486 47 4V TA B
R1487 120
C1487 47 4V TA B
Q1487
UN9216J-(TX).SO
Q1488
UN9115J-(TX).SO
R1485 XX
Q1485 XX
C1485 XX
C1493 XX SL 1608
Q1448
POWER ON
MUTE
Q1491
UN9215J-(TX).SO
R0/P5.1
C1488 10u 4V TA A
R1491 470
R2.5 P2.8
R2.5 P2.8
2.7
2.5
R1489 470
R1490 470
R1488 470k
C1489 10u 4V TA A
R1492 470
Q1492
UN9215J-(TX).SO
R0/P5.1
R5/P0
R0 P2.8
Q1490
UN9216J-(TX).SO
Q1493
UN9113J-(TX).SO
R5/P5.2
Q1489
UN9216J-(TX).SO
Q1494
UN9213J-(TX).SO
Q1489, 1490
MUTE
Q1491-1494
IN/OUT SWITCH
AU_XIN/OUT
C1439 6.3V
C1437 4V
MC3
MC2
MC1
C1435 6.3V
C1434 0.22u
R1426 1500
R1425 47k
C1432 47u 4V TA B
C143 4.7u 4V TA A
09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21
IC109
AFM PROCESSOR
IC109
CXA1737R-T6
C1471 XX B
C1481 0.001u B
C1480 XX 4V TA A
C1468 0.001 B 2012
R1462 0
R1463 XX
C1404 4.7u 4V TA A
C1405 0.22u B
C1406 1u B 2012
C1407 22u 4V TA A
C1479 XX 4V TA A
C1408 XX 6.3V TA A
C1409 0.47u 25V TA A
C1466 0.22u 10V B
R1404 470k
C1402 XX B 2012
R1402 XX
C1403 4.7u 16V TA B
R1403 82k
1.5M_DEV
AU_BPF
1.7M_DEV
A_FADE
66
TO VC-190 BOARD(11/12)
63
62
61
60
C1410 0.01u B
C1411 680p 50V B
R1406 82k
REC_AFM
PB_RF
48
TO VC-190 BOARD(7/12)
C1412 10u TA A
C1474 XX B
R1407 XX 1608
C1490 0.01u B
BPF_MON
67
TO VC-190 BOARD(11/12)
C1414 0.01u B 1608
C1492 68p CH 1608
R1409 820
C1415 3300p 50V B 2012
C1465 0.22u B
C1416 0.47u 25V TA A
R1408 470k
C1417 2200p 1608
SWP
VC_SI
VC_SO
XVC_SCK
XCS_AU
54
TO VC-190 BOARD(8/12)
MC1
MC2
MC3
AU_XIN/OUT
FSC
35
TO VC-190 BOARD(4/12)
R1418 82k
R1410 0 1608
C1439 22u 6.3V TA B
C1437 22u 4V TA A
C1436 XX 6.3V TA B
R1476 0
C1435 33u 6.3V TA B
C1434 0.22u B 10V 1608
C1441 XX B
R1426 1500
R1425 47k
C1433 0.22u 1608 B 10V
R1423 47k
R1424 10k
C1430 0.22u B 1608
C1429 0.22u B 1608
C1432 47u 4V TA B
C1431 4.7u 4V TA A
R1422 560k
R1421 1500
C1444 XX B
C1475 10u 4V A
C1427 XX B 2012
C1476 47k
R1419 0 1608
C1477 10u 4V TA A
R1460 XX
C1426 10u 10V TA B
C1463 10u 4V TA A
R1461 0
C1425 4.7u 4V TA A
C1424 0.22u 10V B
C1423 1u B 2012
C1478 XX 4V TA A
C1422 22u 4V TA A
C1491 XX B 1608
Q1488
C1493 XX SL 1608
1448
WER ON
MUTE
Q1494
UN9213J-(TX).SO
1494
WITCH
AU_XIN/OUT
R0/P5.1
R5/P0
R5/P5.2
R2.4/P2.6
R1.6/P2.5
R1.6/P2.7
R0.6/P1.5
R1.6/P0.2
R0.6/P0.3
R2.5/P2.3
R0.1/P1.3
R2.1/P1.1
R1.4/P1
R1.8/P1.3
R2.3/P1.5
R2.5/P1.8

• SIGNAL PATH

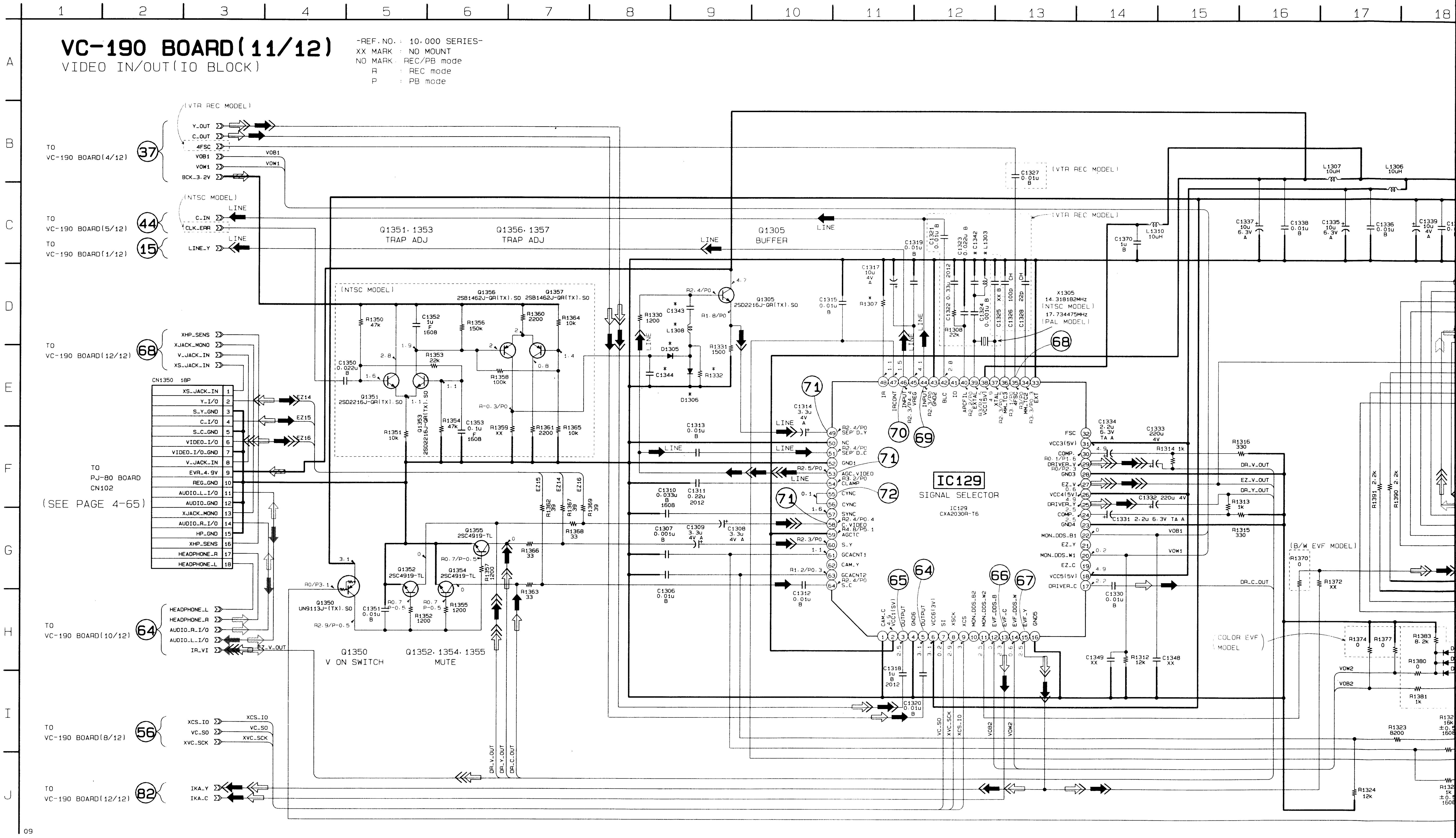
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨	⇨

- **For schematic diagrams.**
- Refer to page 4-15 for Printed Wiring Board.

VC-190 BOARD(11/12)

VIDEO IN/OUT(IO BLOCK)

-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode



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12
13
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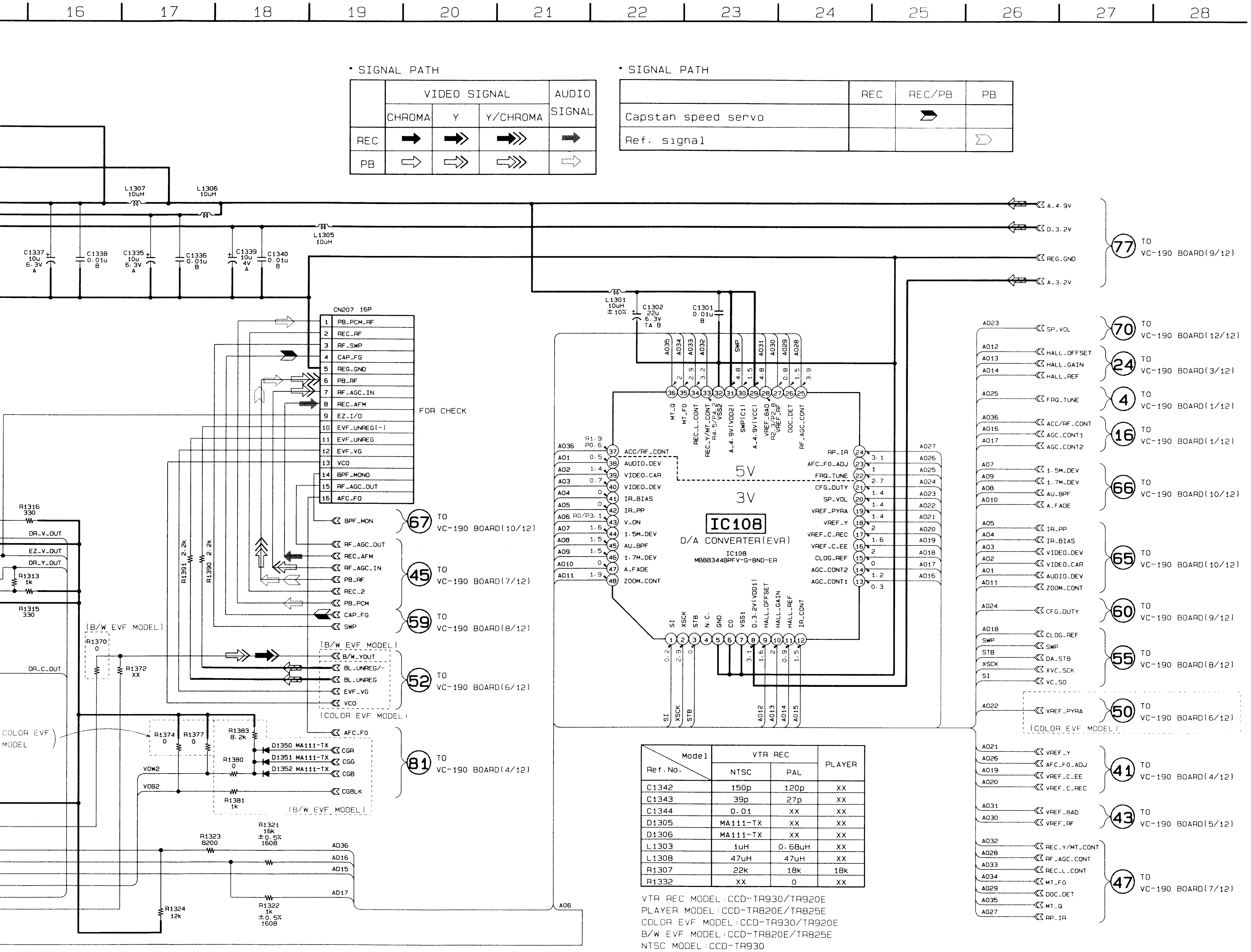
15
16
17
18
A
B
C
D
E
F
G
H
I
J
(VTR REC MODEL)
Y_OUT
C_OUT
4FSC
VOB1
VOW1
BCK_3.2V
TO VC-190 BOARD(4/12)
37
(NTSC MODEL)
LINE
C_IN
CLK_ERR
TO VC-190 BOARD(5/12)
44
TO VC-190 BOARD(1/12)
15
LINE_Y
XHP_SENS
XJACK_MONO
V_JACK_IN
XS_JACK_IN
TO VC-190 BOARD(12/12)
68
CN1350 18P
XS_JACK_IN
Y_I/O
S_Y_GND
C_I/O
S_C_GND
VIDEO_I/O
VIDEO_I/O_GND
V_JACK_IN
EVR_4.9V
REG_GND
AUDIO_L_I/O
AUDIO_GND
XJACK_MONO
AUDIO_R_I/O
HP_GND
XHP_SENS
HEADPHONE_R
HEADPHONE_L
TO PJ-80 BOARD CN102
(SEE PAGE 4-65)
EZ14
EZ15
EZ16
HEADPHONE_L
HEADPHONE_R
AUDIO_R_I/O
AUDIO_L_I/O
IR_VI
EZ_V_OUT
TO VC-190 BOARD(10/12)
64
XCS_IO
VC_SO
XVC_SCK
TO VC-190 BOARD(8/12)
56
IKA_Y
IKA_C
TO VC-190 BOARD(12/12)
82
Q1351, 1353 TRAP ADJ
Q1356, 1357 TRAP ADJ
Q1305 BUFFER
(NTSC MODEL)
Q1356 2SB1462J-QR(TX).SO
Q1357 2SB1462J-QR(TX).SO
R1350 47k
C1352 1u F 1608
R1356 150k
R1360 2200
R1364 10k
R1353 22k
R1358 100k
C1350 0.022u B
Q1351 2SD2216J-QR(TX).SO
Q1353 2SD2216J-QR(TX).SO
R1351 10k
R1354 47k
C1353 0.1u F 1608
R1359 XX
R1361 2200
R1365 10k
R0.3/P0
EZ15
EZ14
EZ16
R1362 39
R1367 39
R1369 39
R1368 33
Q1355 2SC4919-TL
R0.7/P-0.5
R1366 33
R1357 1200
R1363 33
Q1352 2SC4919-TL
Q1354 2SC4919-TL
Q1350 UN9113J-(TX).SO
R0/P3.1
C1351 0.01u B
R2.9/P-0.5
R1352 1200
R1355 1200
Q1350 V ON SWITCH
Q1352, 1354, 1355 MUTE
DR_V_OUT
DR_Y_OUT
DR_C_OUT
R2.4/P0
C1343
L1308
D1305
C1344
R1330 1200
R1.8/P0
R1331 1500
R1332
D1306
Q1305 2SD2216J-QR(TX).SO
C1315 0.01u B
C1317 10u 4V A
R1307
C1319 0.01u B
C1321 0.01u B
C1322 0.33u 2012
C1323 0.022u B
C1342
L1303
C1324 0.001u B
C1325 XX B
C1326 100p CH
C1328 22p CH
R1308 22k
X1305 14.31818MHz (NTSC MODEL) 17.734475MHz (PAL MODEL)
C1327 0.01u B
(VTR REC MODEL)
C1370 1u B
L1310 10uH
L1307 10uH
L1306 10uH
C1337 10u 6.3V A
C1338 0.01u B
C1335 10u 6.3V A
C1336 0.01u B
C1339 10u 4V A
C1314 3.3u 4V A
C1313 0.01u B
C1310 0.033u B 1608
C1311 0.22u 2012
C1307 0.001u B
C1309 3.3u 4V A
C1308 3.3u 4V A
C1306 0.01u B
C1312 0.01u B
C1318 1u B 2012
C1320 0.01u B
IC129 SIGNAL SELECTOR
IC129 CXA2030R-T6
SEP'D_Y
NC
SEP'D_C
GND1
AGC_VIDEO
CLAMP
CYNC
SYNC
C_VIDEO
AGCTC
S_Y
GCACNT1
CAM_Y
GCACNT2
S_C
IR
IRCONT
INPUT
VREG
GND2
BLC
IO
APCFIL
EXTAL
VCC(5V)
XTAL
HM_TCS
4FSC
HM_TC2
EXT
FSC
VCC3(5V)
COMP
DRIVER_V
GND3
EZ_Y
VCC4(5V)
DRIVER_Y
COMP
GND4
MON_DOS_B1
MON_DOS_W1
EZ_Y
EZ_C
VCC5(5V)
DRIVER_C
CAM_C
VCC1(5V)
OUTPUT
GND6
VCC6(3V)
SI
XSCK
XCS
MON_DOS_B2
MON_DOS_W2
EVF_DOS_B
EVF_C
EVF_DOS_W
EVF_Y
GND5
70
69
71
72
65
64
66
67
C1334 2.2u 6.3V TA A
C1333 220u 4V
R1314 1k
C1332 220u 4V
C1331 2.2u 6.3V TA A
C1330 0.01u B
C1349 XX
R1312 12k
C1348 XX
R1316 330
DR_V_OUT
EZ_V_OUT
DR_Y_OUT
R1313 1k
R1315 330
DR_C_OUT
(B/W EVF MODEL)
R1370 0
R1372 XX
R1391 2.2k
R1390 2.2k
(COLOR EVF MODEL)
R1374 0
R1377 0
R1383 8.2k
R1380 0
R1381 1k
VOW2
VOB2
R1323 8200
R1324 12k
VC_SO
XVC_SCK
XCS_IO
VOB2
VOW2
09


16
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21
22
23
24
25
26
27
28
L1307 10uH
L1306 10uH
L1305 10uH
C1337 10u 6.3V A
C1338 0.01u B
C1335 10u 6.3V A
C1336 0.01u B
C1339 10u 4V A
C1340 0.01u B
CN207 16P
1 PB_PCM_RF
2 REC_RF
3 RF_SWP
4 CAP_FG
5 REG_GND
6 PB_RF
7 RF_AGC_IN
8 REC_AFM
9 EZ_I/O
10 EVF_UNREG(-)
11 EVF_UNREG
12 EVF_VG
13 VCO
14 BPF_MONO
15 RF_AGC_OUT
16 AFC_FO
FOR CHECK
L1301 10uH ±10%
C1302 22u 6.3V TA B
C1301 0.01u B
IC108
D/A CONVERTER(EVR)
IC108 MB88344BPFV-G-BND-ER
5V
3V
ACC/RF_CONT
AUDIO_DEV
VIDEO_CAR
VIDEO_DEV
IR_BIAS
IR_PP
V_ON
1.5M_DEV
AU_BPF
1.7M_DEV
A_FADE
ZOOM_CONT
RP_IR
AFC_FO_ADJ
FRQ_TUNE
CFG_DUTY
SP_VOL
VREF_PYRA
VREF_C_REC
VREF_Y
VREF_C_EE
CLOG_REF
AGC_CONT2
AGC_CONT1
MT_Q
MT_FO
REC_L_CONT
REC_Y/MT_CONT
VSS2
A_4.9V(VDD2)
SWP(C1)
A_4.9V(VCC)
VREF_BAD
VREF_RF
DOC_DET
RF_AGC_CONT
SI
XSCK
STB
N.C.
GND
CO
VSS1
D_3.2V(VDD1)
HALL_OFFSET
HALL_GAIN
HALL_REF
IR_CONT
A_4.9V
D_3.2V
REG_GND
A_3.2V
77 TO VC-190 BOARD(9/12)
70 TO VC-190 BOARD(12/12)
24 TO VC-190 BOARD(3/12)
4 TO VC-190 BOARD(1/12)
16 TO VC-190 BOARD(1/12)
66 TO VC-190 BOARD(10/12)
65 TO VC-190 BOARD(10/12)
60 TO VC-190 BOARD(9/12)
55 TO VC-190 BOARD(8/12)
50 TO VC-190 BOARD(6/12)
(COLOR EVF MODEL)
41 TO VC-190 BOARD(4/12)
43 TO VC-190 BOARD(5/12)
47 TO VC-190 BOARD(7/12)
67 TO VC-190 BOARD(10/12)
45 TO VC-190 BOARD(7/12)
59 TO VC-190 BOARD(8/12)
52 TO VC-190 BOARD(6/12)
81 TO VC-190 BOARD(4/12)
BPF_MON
RF_AGC_OUT
REC_AFM
RF_AGC_IN
PB_RF
REC_2
PB_PCM
CAP_FG
SWP
(B/W EVF MODEL)
B/W_YOUT
BL_UNREG/-
BL_UNREG
EVF_VG
VCO
(COLOR EVF MODEL)
AFC_FO
CGR
CGG
CGB
CGBLK
D1350 MA111-TX
D1351 MA111-TX
D1352 MA111-TX
R1383 8.2k
R1380 0
R1381 1k
R1374 0
R1377 0
(B/W EVF MODEL)
R1316 330
R1315 330
R1313 1k
DR_V_OUT
EZ_V_OUT
DR_Y_OUT
DR_C_OUT
R1391 2.2k
R1390 2.2k
R1370 0
R1372 XX
COLOR EVF MODEL
VOW2
VOB2
R1323 8200
R1321 16k ±0.5% 1608
R1324 12k
R1322 1k ±0.5% 1608
AO36
AO16
AO15
AO17
AO6

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

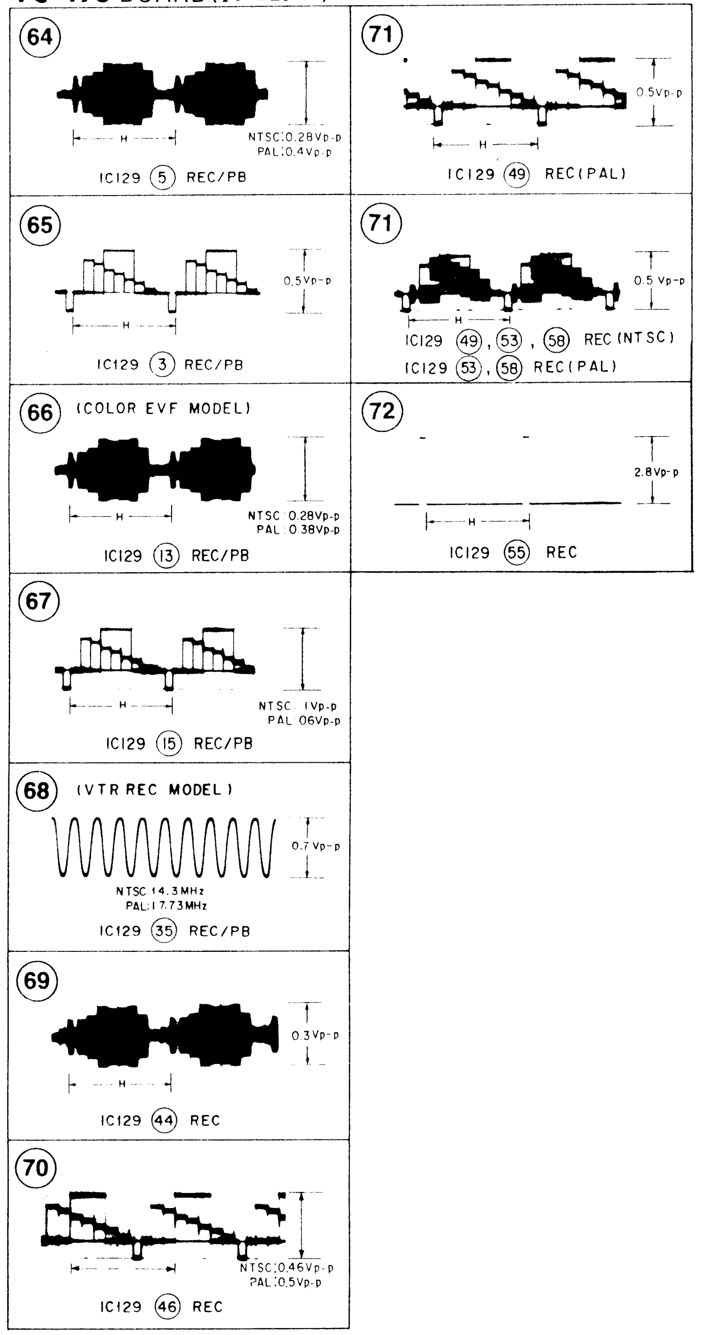
• SIGNAL PATH

	REC	REC/PB	PB
Capstan speed servo		➡	
Ref. signal			▷

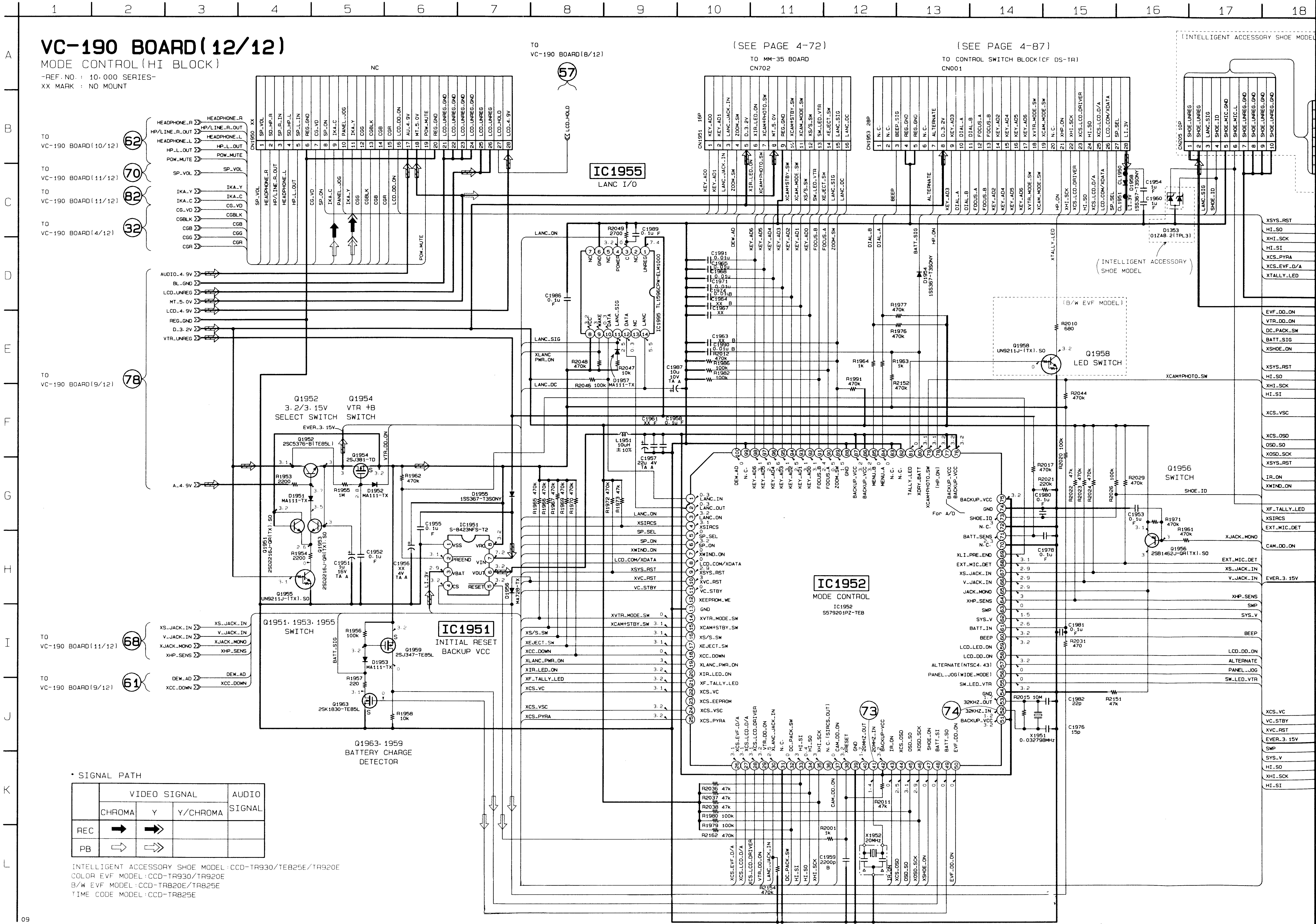
Model / Ref. No.	VTR REC		PLAYER
	NTSC	PAL	
C1342	150p	120p	XX
C1343	39p	27p	XX
C1344	0.01	XX	XX
D1305	MA111-TX	XX	XX
D1306	MA111-TX	XX	XX
L1303	1uH	0.68uH	XX
L1308	47uH	47uH	XX
R1307	22k	18k	18k
R1332	XX	0	XX

VTR REC MODEL CCD-TR930/TR920E
PLAYER MODEL : CCD-TR820E/TR825E
COLOR EVF MODEL : CCD-TR930/TR920E
B/W EVF MODEL : CCD-TR820E/TR825E
NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

VC-190 BOARD(IO BLOCK)



- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.

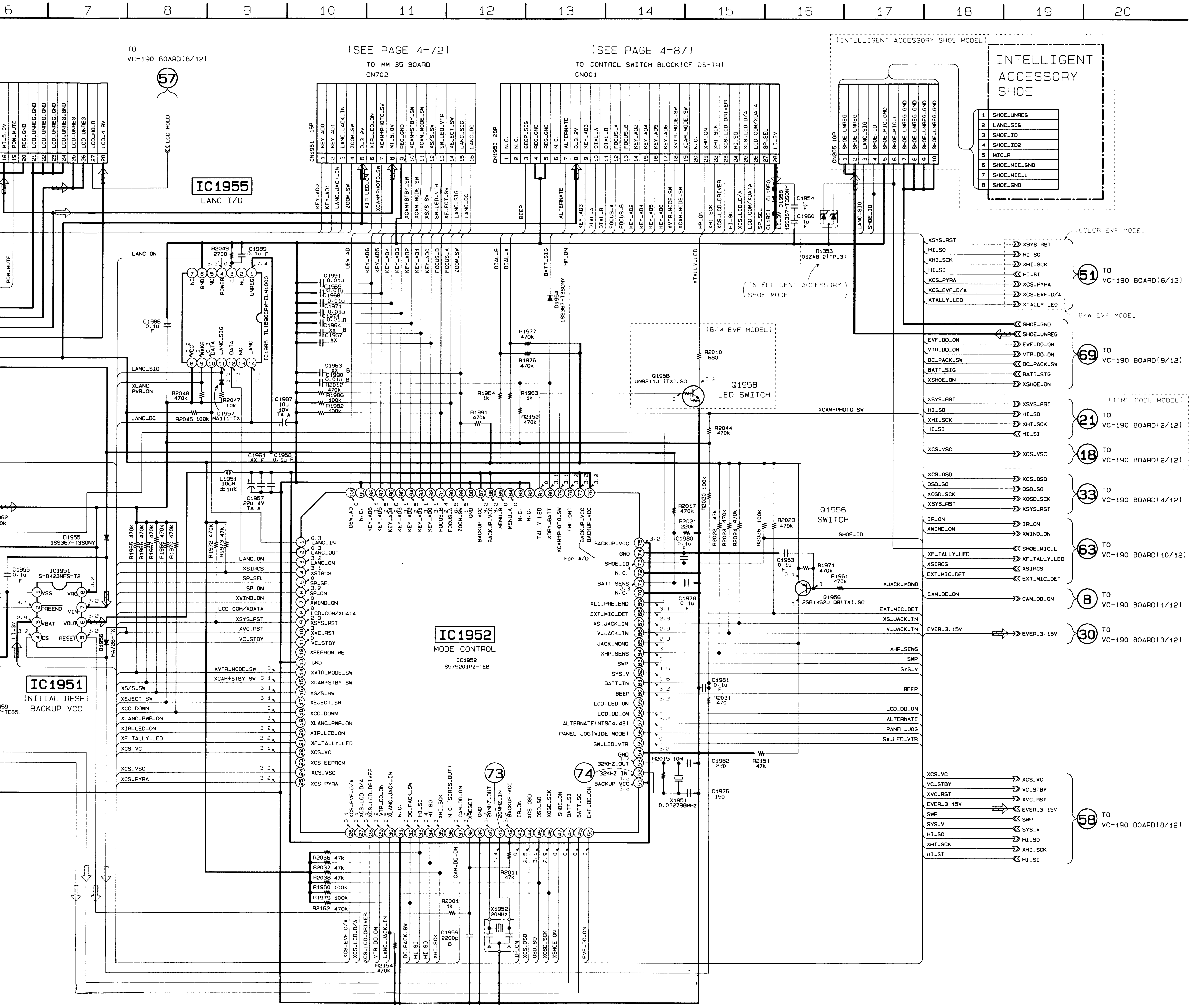

VC-190 BOARD(12/12)
MODE CONTROL(HI BLOCK)
-REF.NO. : 10,000 SERIES-
XX MARK : NO MOUNT
TO VC-190 BOARD(10/12) 62
TO VC-190 BOARD(11/12) 70
TO VC-190 BOARD(11/12) 82
TO VC-190 BOARD(4/12) 32
TO VC-190 BOARD(9/12) 78
TO VC-190 BOARD(11/12) 68
TO VC-190 BOARD(9/12) 61
TO VC-190 BOARD(8/12) 57
(SEE PAGE 4-72) TO MM-35 BOARD CN702
(SEE PAGE 4-87) TO CONTROL SWITCH BLOCK(CF OS-TR) CN001
(INTELLIGENT ACCESSORY SHOE MODEL)
CN1950 XX
CN1951 16P
CN1953 28P
CN205 10P
IC1955 LANC I/O
IC1995 TL1596CPW-ELM1000
Q1952 3.2/3.15V SELECT SWITCH
Q1954 VTR +B SWITCH
Q1951, 1953, 1955 SWITCH
IC1951 INITIAL RESET BACKUP VCC
IC1951 S-8423NFS-T2
Q1963, 1959 BATTERY CHARGE DETECTOR
IC1952 MODE CONTROL
IC1952 S579201PZ-TEB
Q1958 LED SWITCH
(B/W EVF MODEL)
Q1956 SWITCH
(INTELLIGENT ACCESSORY SHOE MODEL)
D1353 01ZA8.2(TPL3)
X1951 0.032798MHz
X1952 20MHz
73
74
09

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	⇛		
PB	⇨	⇨		

INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TE825E/TR920E
COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
TIME CODE MODEL:CCD-TR825E

MODE CONTROL
VC-190 (12/12)


6
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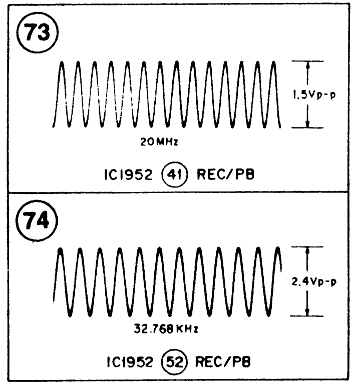
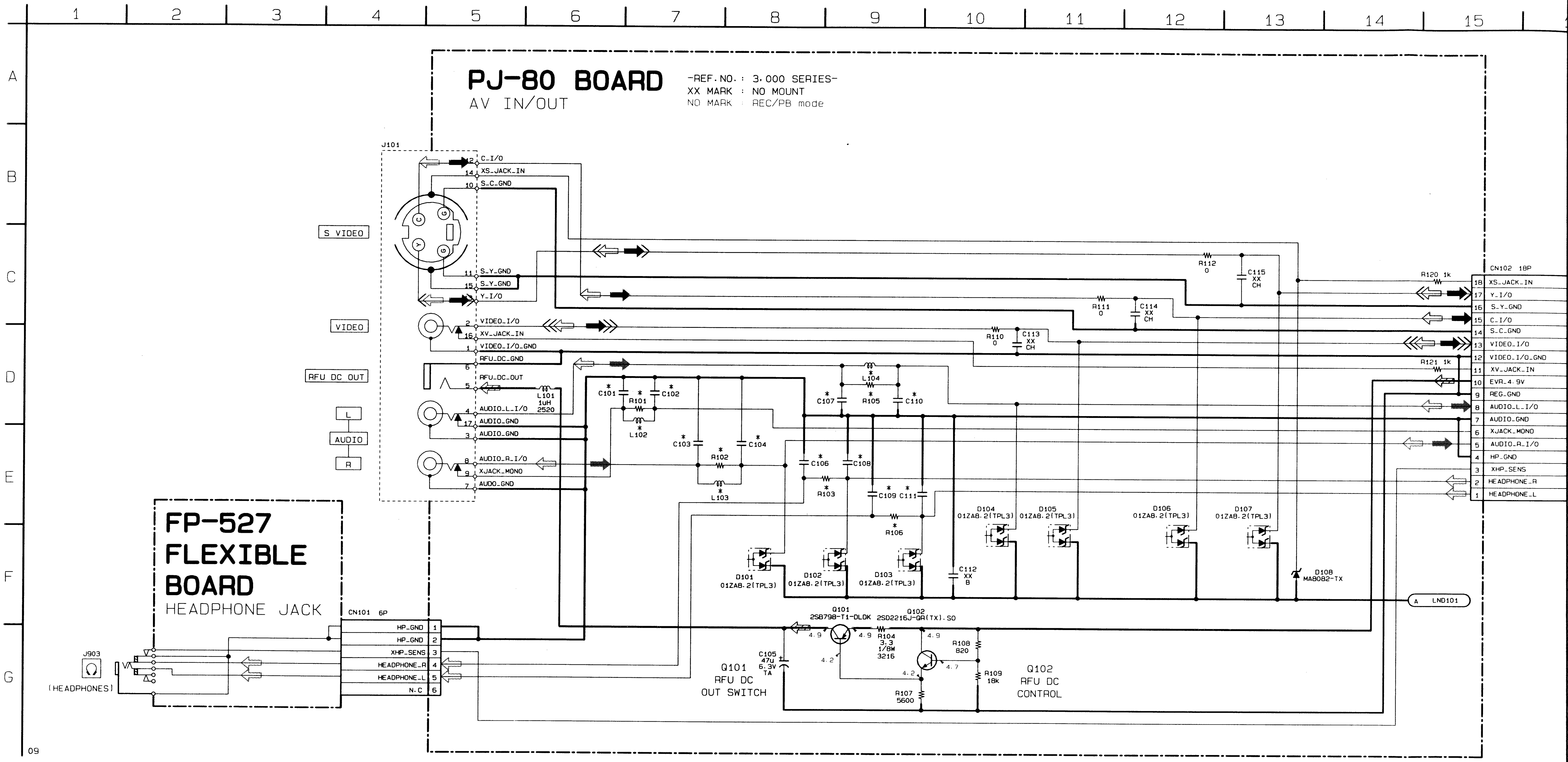
19
20
TO VC-190 BOARD (8/12)
57
(SEE PAGE 4-72)
TO MM-35 BOARD
CN702
(SEE PAGE 4-87)
TO CONTROL SWITCH BLOCK (CF DS-TA)
CN001
(INTELLIGENT ACCESSORY SHOE MODEL)
INTELLIGENT ACCESSORY SHOE
SHOE_UNREG
LANC_SIG
SHOE_ID
SHOE_ID2
MIC_R
SHOE_MIC_GND
SHOE_MIC_L
SHOE_GND
CN1951 16P
CN1953 28P
CN205 10P
IC1955
LANC I/O
IC1995 TL1596CPW-ELM1000
Q1958 UN9211J-(TX).SO
Q1958
LED SWITCH
(B/W EVF MODEL)
(INTELLIGENT ACCESSORY SHOE MODEL)
D1353 01ZA8.2(TPL3)
Q1956
SWITCH
Q1956 2SB1462J-QR(TX).SO
IC1952
MODE CONTROL
IC1952 S579201PZ-TEB
IC1951
INITIAL RESET BACKUP VCC
IC1951 S-8423NFS-T2
D1955 1SS367-T3SONY
D1957 MA111-TX
D1954 1SS367-T3SONY
L1951 10uH
X1951 0.032798MHz
X1952 20MHz
(COLOR EVF MODEL)
51
TO VC-190 BOARD (6/12)
(B/W EVF MODEL)
69
TO VC-190 BOARD (9/12)
(TIME CODE MODEL)
21
TO VC-190 BOARD (2/12)
18
TO VC-190 BOARD (2/12)
33
TO VC-190 BOARD (4/12)
63
TO VC-190 BOARD (10/12)
8
TO VC-190 BOARD (1/12)
30
TO VC-190 BOARD (3/12)
58
TO VC-190 BOARD (8/12)
73
74

VC-190 BOARD (HI BLOCK)




1
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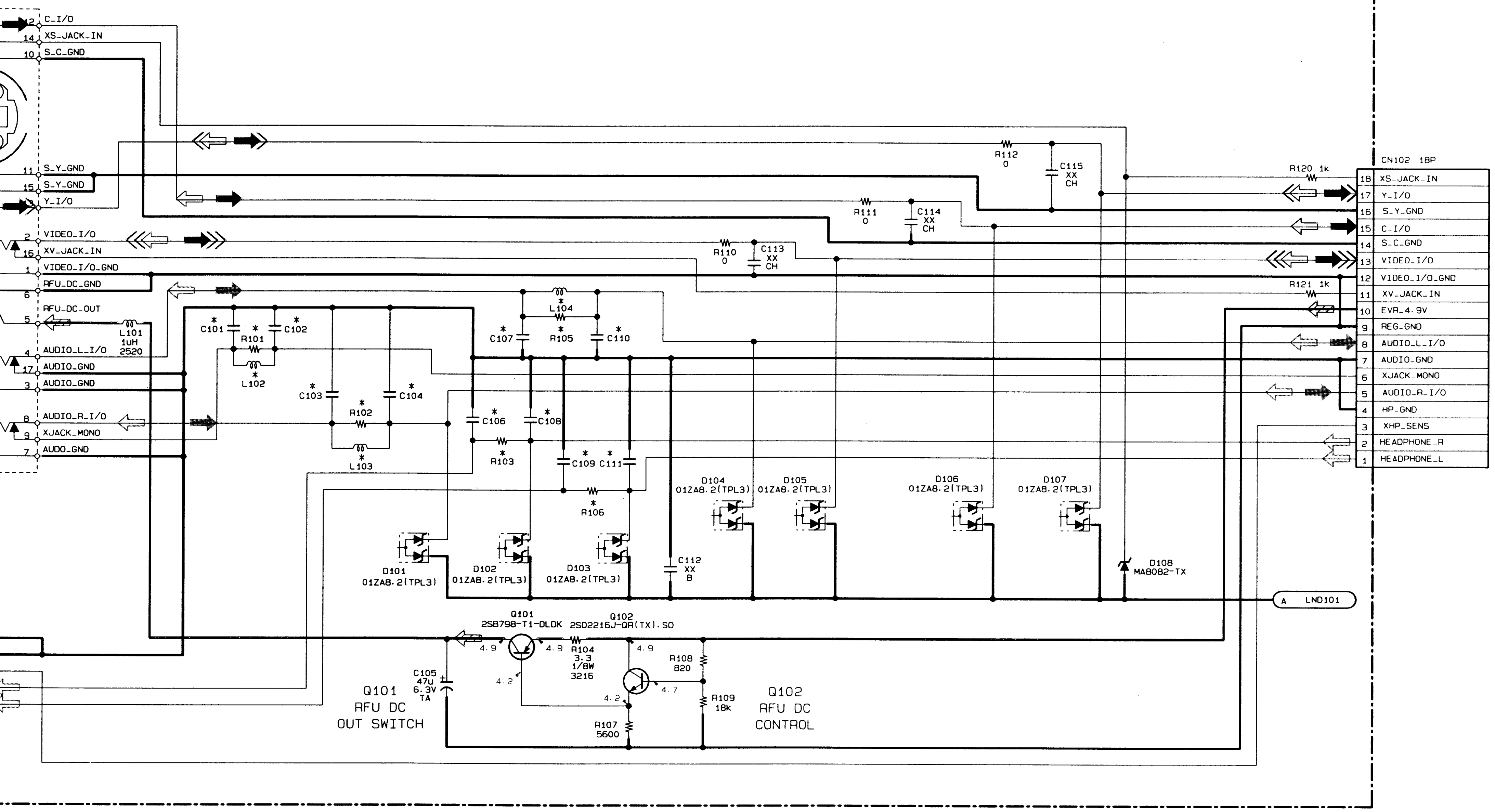
11
12
13
14
15
A
B
C
D
E
F
G
PJ-80 BOARD
AV IN/OUT
-REF.NO.: 3,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
J101
S VIDEO
VIDEO
RFU DC OUT
L
AUDIO
R
12 C_I/O
14 XS_JACK_IN
10 S_C_GND
11 S_Y_GND
15 S_Y_GND
13 Y_I/O
2 VIDEO_I/O
16 XV_JACK_IN
1 VIDEO_I/O_GND
RFU_DC_GND
6
5 RFU_DC_OUT
4 AUDIO_L_I/O
17 AUDIO_GND
3 AUDIO_GND
8 AUDIO_R_I/O
9 XJACK_MONO
7 AUDO_GND
C
G
Y
G
L101 1uH 2520
C101
R101
C102
L102
C103
R102
C104
L103
C107
L104
R105
C110
C106
C108
R103
C109
C111
R106
C112 XX B
R110 0
C113 XX CH
R111 0
C114 XX CH
R112 0
C115 XX CH
R120 1k
R121 1k
D101 01ZA8.2(TPL3)
D102 01ZA8.2(TPL3)
D103 01ZA8.2(TPL3)
D104 01ZA8.2(TPL3)
D105 01ZA8.2(TPL3)
D106 01ZA8.2(TPL3)
D107 01ZA8.2(TPL3)
D108 MA8082-TX
A LND101
Q101 2SB798-T1-DLDK
Q102 2SD2216J-QR(TX).SO
4.9
4.9
4.9
4.2
4.2
4.7
R104 3.3 1/8W 3216
C105 47u 6.3V TA
R108 820
R109 18k
R107 5600
Q101 RFU DC OUT SWITCH
Q102 RFU DC CONTROL
CN102 18P
18 XS_JACK_IN
17 Y_I/O
16 S_Y_GND
15 C_I/O
14 S_C_GND
13 VIDEO_I/O
12 VIDEO_I/O_GND
11 XV_JACK_IN
10 EVR_4.9V
9 REG_GND
8 AUDIO_L_I/O
7 AUDIO_GND
6 XJACK_MONO
5 AUDIO_R_I/O
4 HP_GND
3 XHP_SENS
2 HEADPHONE_R
1 HEADPHONE_L
FP-527 FLEXIBLE BOARD
HEADPHONE JACK
CN101 6P
HP_GND 1
HP_GND 2
XHP_SENS 3
HEADPHONE_R 4
HEADPHONE_L 5
N.C 6
J903
(HEADPHONES)
09

5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19

PJ-80 BOARD

AV IN/OUT

-REF. NO. : 3,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode



C_I/O
XS_JACK_IN
S_C_GND
S_Y_GND
S_Y_GND
Y_I/O
VIDEO_I/O
XV_JACK_IN
VIDEO_I/O_GND
RFU_DC_GND
RFU_DC_OUT
AUDIO_L_I/O
AUDIO_GND
AUDIO_GND
AUDIO_R_I/O
XJACK_MONO
AUDO_GND
L101 1uH 2520
C101
R101
C102
L102
C103
R102
C104
L103
C107
L104
R105
C110
C106
C108
R103
C109 C111
R106
R110 0
C113 XX CH
R111 0
C114 XX CH
R112 0
C115 XX CH
R120 1k
R121 1k
D101 01ZA8.2(TPL3)
D102 01ZA8.2(TPL3)
D103 01ZA8.2(TPL3)
C112 XX B
D104 01ZA8.2(TPL3)
D105 01ZA8.2(TPL3)
D106 01ZA8.2(TPL3)
D107 01ZA8.2(TPL3)
D108 MA8082-TX
A LND101
Q101 2SB798-T1-DLDK
Q102 2SD2216J-QR(TX).SO
R104 3.3 1/8W 3216
R108 820
R109 18k
R107 5600
C105 47u 6.3V TA
4.9
4.9
4.9
4.2
4.2
4.7
Q101 RFU DC OUT SWITCH
Q102 RFU DC CONTROL
CN102 18P
18 XS_JACK_IN
17 Y_I/O
16 S_Y_GND
15 C_I/O
14 S_C_GND
13 VIDEO_I/O
12 VIDEO_I/O_GND
11 XV_JACK_IN
10 EVR_4.9V
9 REG_GND
8 AUDIO_L_I/O
7 AUDIO_GND
6 XJACK_MONO
5 AUDIO_R_I/O
4 HP_GND
3 XHP_SENS
2 HEADPHONE_R
1 HEADPHONE_L

TO
VC-190 BOARD(11/12)
CN1350
(SEE PAGE 4-55)

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

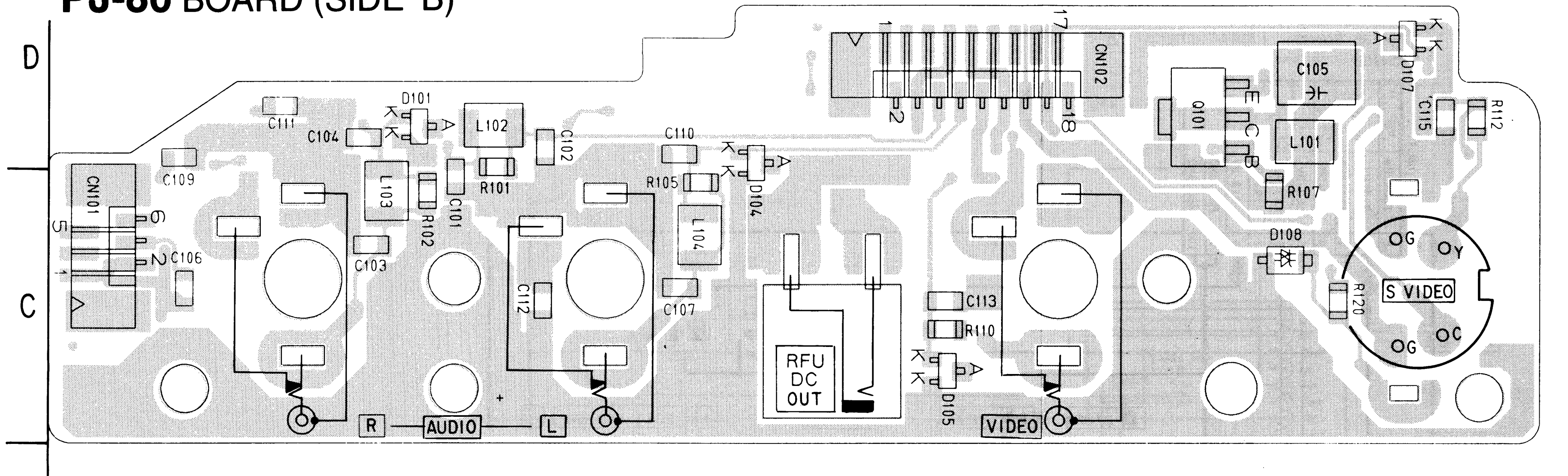
Model / Ref. No.	TYPE A	TYPE B	TYPE C	TYPE D
C101	XX	0.001	0.001	XX
C102	XX	0.001	0.001	XX
C103	XX	0.001	0.001	XX
C104	XX	0.001	0.001	XX
C106	0.001	0.001	0.001	XX
C107	XX	0.001	0.001	XX
C108	0.001	0.001	0.001	XX
C109	0.001	0.001	0.001	XX
C110	XX	0.001	0.001	XX
C111	0.001	0.001	0.001	XX
L102	XX	100uH	100uH	XX
L103	XX	100uH	100uH	XX
L104	XX	100uH	100uH	XX
R101	0	XX	XX	0
R102	0	XX	XX	0
R103	100uH	100uH	100uH	0
R105	0	XX	XX	0
R106	100uH	100uH	100uH	0

TYPE A MODEL:CCD-TR930
TYPE B MODEL:CCD-TR820E
TYPE C MODEL:CCD-TR825E
TYPE D MODEL:CCD-TR920E

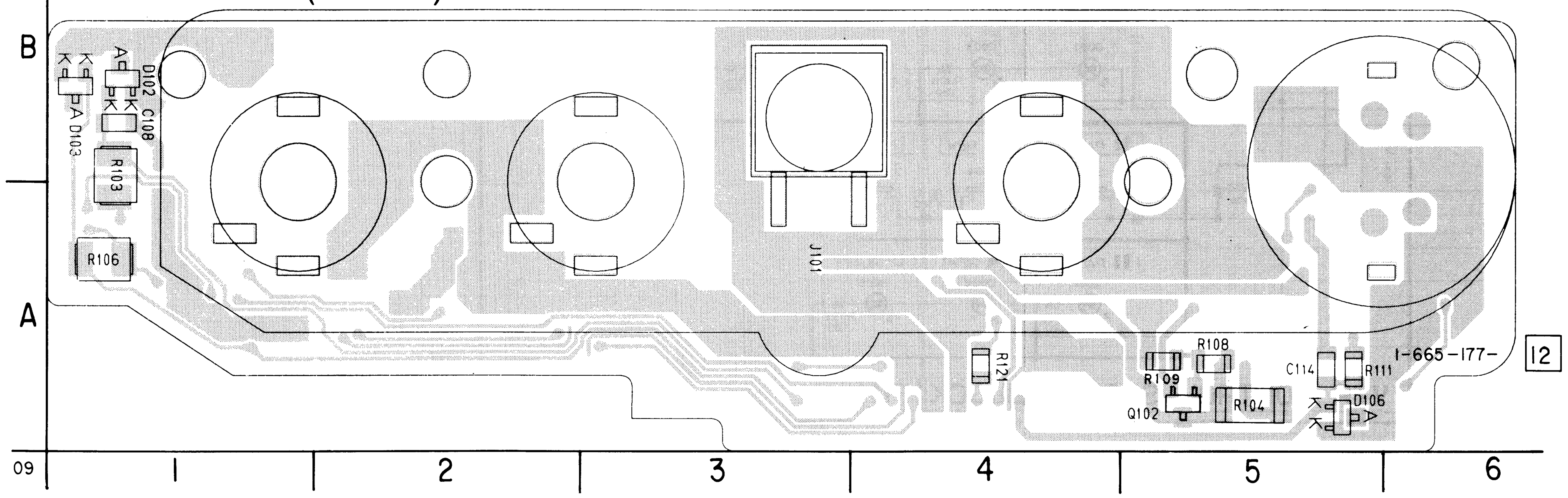
PJ-80 (AV IN/OUT) PRINTED WIRING BOARD

– Ref No. PJ-80 BOARD: 3,000 series –

PJ-80 BOARD (SIDE B)


D
C
1
17
2
18
CN102
Q101
E
C
B
C105
L101
R107
D107
K
A
C115
R112
D101
C111
C104
L102
C102
C110
R105
D104
L104
C107
R101
C101
R102
L103
C103
C109
CN101
C106
C112
D108
R120
S VIDEO
OG
OY
OC
RFU DC OUT
C113
R110
D105
R
AUDIO
L
VIDEO

PJ-80 BOARD (SIDE A)

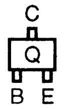

B
A
D102
C108
D103
R103
R106
J101
R108
R109
R121
Q102
R104
C114
R111
D106
1-665-177-
12
09
1
2
3
4
5
6

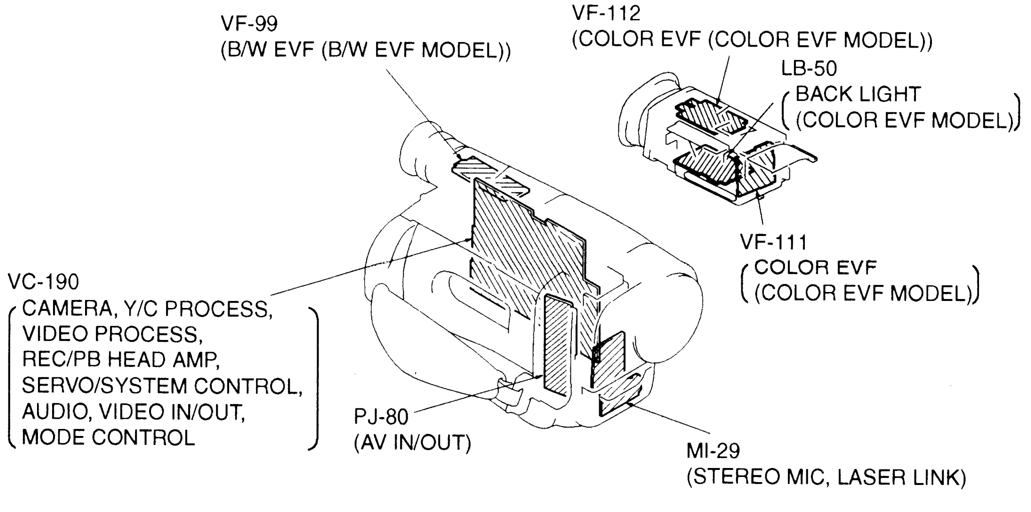
PJ-80 BOARD	
C101	C-2
C102	D-2
C103	C-2
C104	D-2
C105	D-5
C106	C-1
C107	C-3
C109	D-1
C110	D-3
C111	D-1
C112	C-2
C113	C-4
C114	A-5
C115	D-6
CN101	C-1
CN102	D-4
D101	D-2
D104	D-3
D105	C-4
D106	A-5
D107	D-6
D108	C-5
J101	A-1
L101	D-5
L102	D-2
L103	C-2
L104	C-3
Q101	D-5
Q102	A-5
R101	D-2
R102	C-2
R104	A-5
R105	C-3
R106	A-1
R107	C-5
R108	A-5
R109	A-5
R110	C-4
R111	A-5
R112	D-6
R120	C-5
R121	A-4

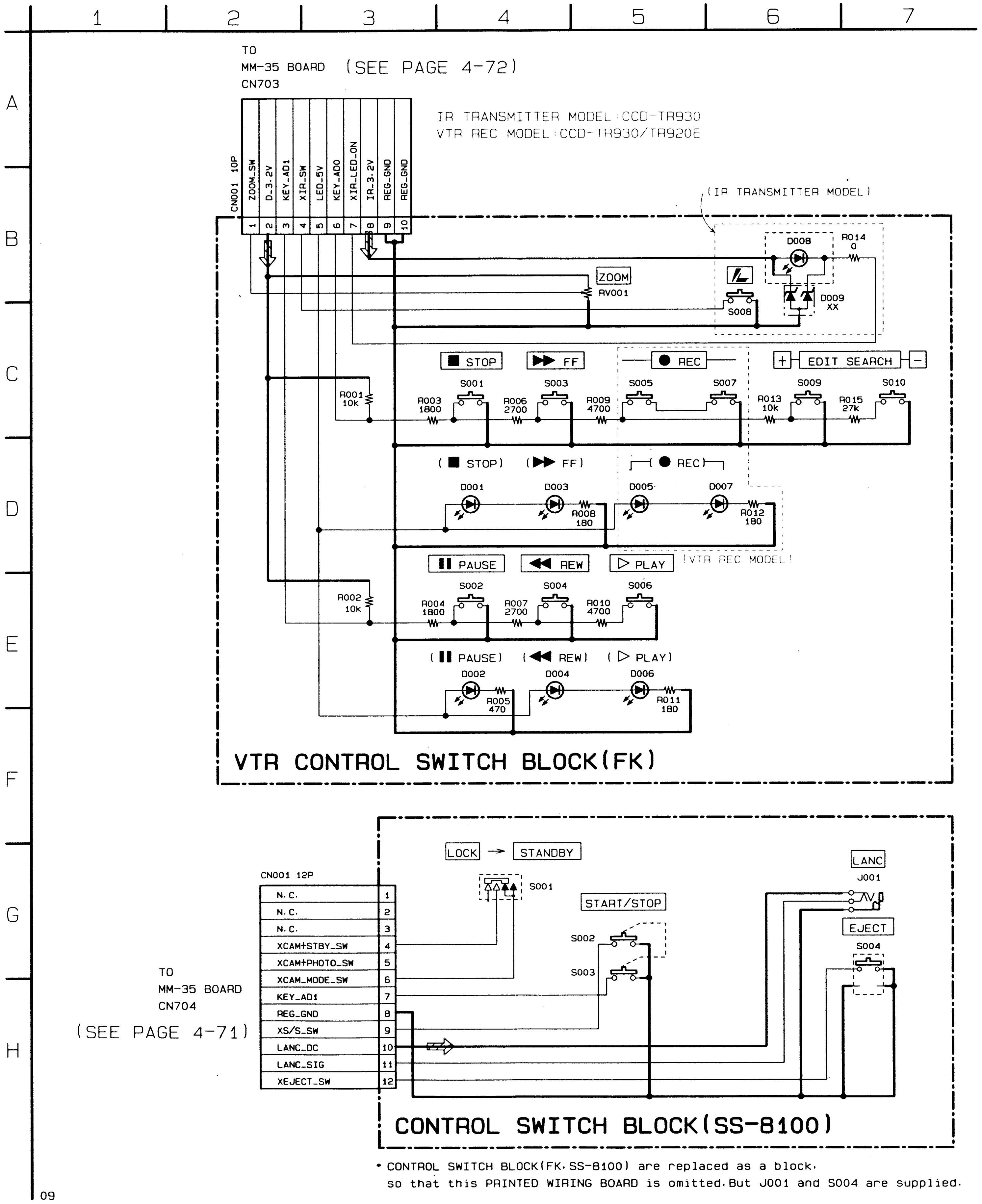
- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor




VF-99
(B/W EVF (B/W EVF MODEL))
VF-112
(COLOR EVF (COLOR EVF MODEL))
LB-50
(BACK LIGHT
(COLOR EVF MODEL))
VF-111
(COLOR EVF
(COLOR EVF MODEL))
VC-190
(CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL)
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)


1
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3
4
5
6
7
A
B
C
D
E
F
G
H
TO
MM-35 BOARD
CN703
(SEE PAGE 4-72)
IR TRANSMITTER MODEL:CCD-TR930
VTR REC MODEL:CCD-TR930/TR920E
CN001 10P
ZOOM_SW
D_3.2V
KEY_AD1
XIR_SW
LED_5V
KEY_AD0
XIR_LED_ON
IR_3.2V
REG_GND
REG_GND
1
2
3
4
5
6
7
8
9
10
(IR TRANSMITTER MODEL)
D008
R014
0
ZOOM
RV001
S008
D009
XX
STOP
FF
REC
+
EDIT SEARCH
-
S001
S003
S005
S007
S009
S010
R001
10k
R003
1800
R006
2700
R009
4700
R013
10k
R015
27k
(STOP)
(FF)
REC
D001
D003
D005
D007
R008
180
R012
180
PAUSE
REW
PLAY
(VTR REC MODEL)
S002
S004
S006
R002
10k
R004
1800
R007
2700
R010
4700
(PAUSE)
(REW)
(PLAY)
D002
D004
D006
R005
470
R011
180
VTR CONTROL SWITCH BLOCK(FK)
LOCK
STANDBY
S001
START/STOP
S002
S003
LANC
J001
EJECT
S004
CN001 12P
N.C.
N.C.
N.C.
XCAM+STBY_SW
XCAM+PHOTO_SW
XCAM_MODE_SW
KEY_AD1
REG_GND
XS/S_SW
LANC_DC
LANC_SIG
XEJECT_SW
1
2
3
4
5
6
7
8
9
10
11
12
TO
MM-35 BOARD
CN704
(SEE PAGE 4-71)
CONTROL SWITCH BLOCK(SS-8100)
09

• CONTROL SWITCH BLOCK(FK·SS-8100) are replaced as a block.
so that this PRINTED WIRING BOARD is omitted. But J001 and S004 are supplied.

TIME CODE, CONTROL SWITCH BLOCK

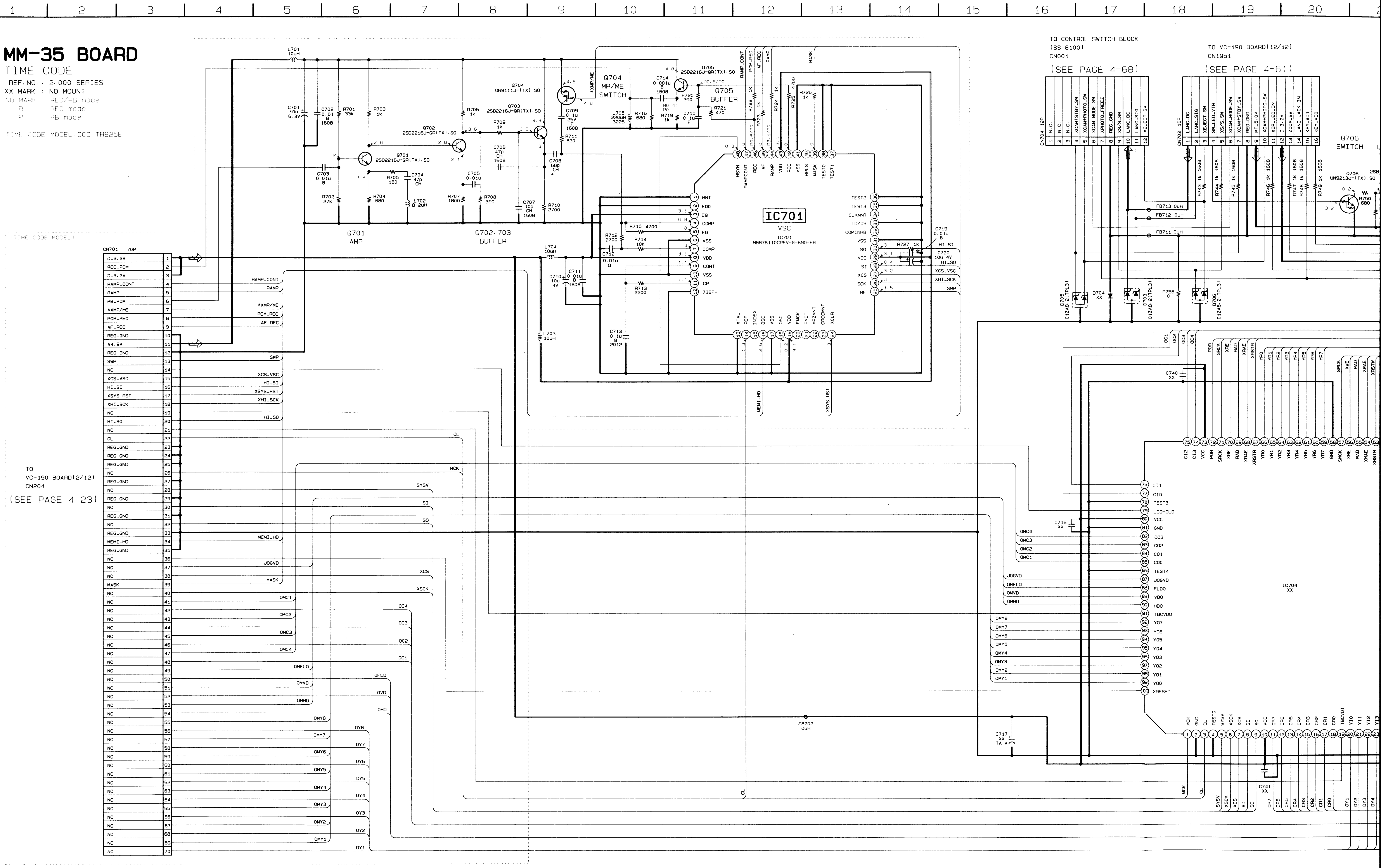
MM-35 FK, SS-8100

MM-35 BOARD

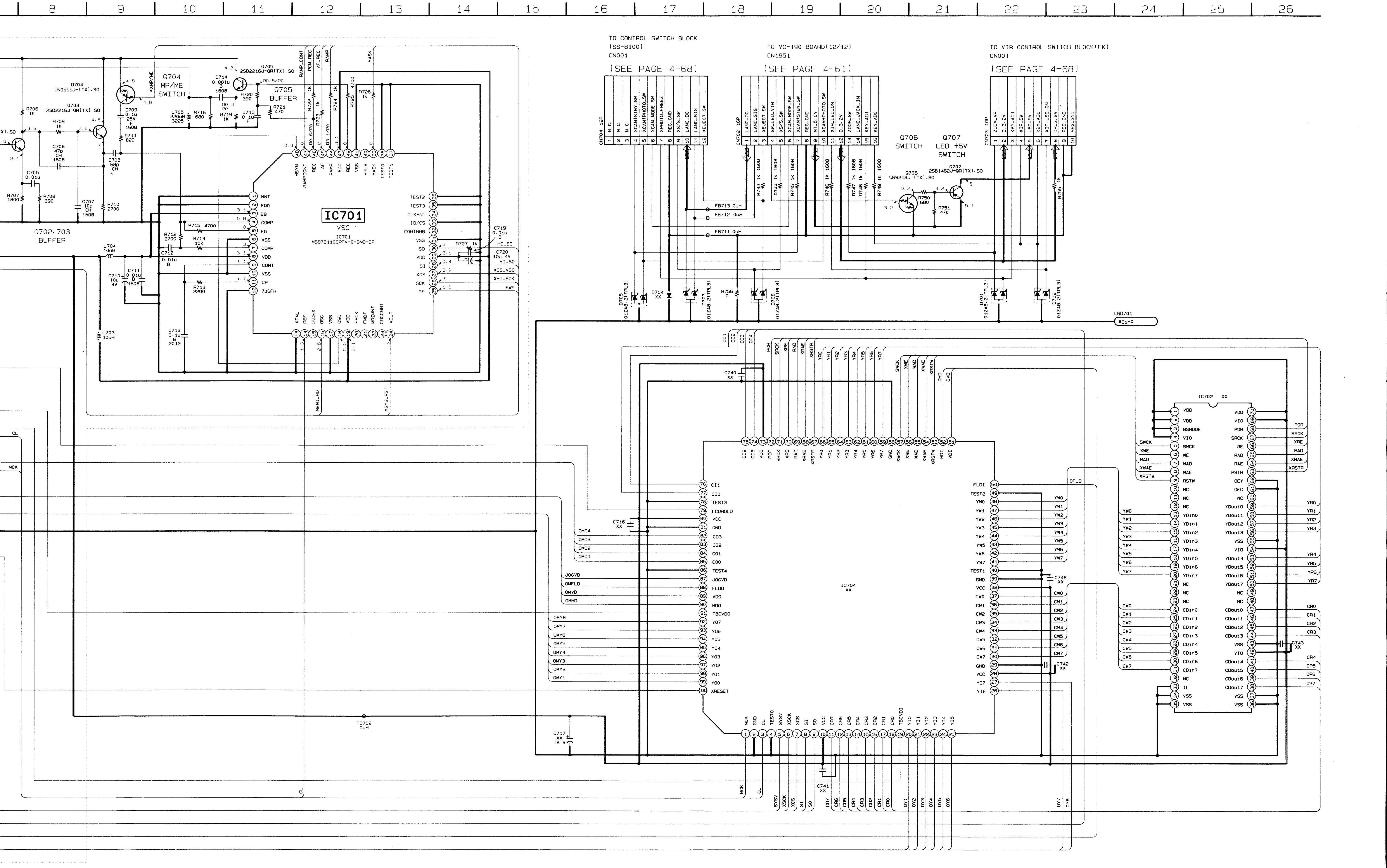
TIME CODE

-REF.NO.: 2,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode

TIME CODE MODEL:CCD-TR825E



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
(TIME CODE MODEL)
L701 10uH
C701 10u 6.3V
C702 0.01 B 1608
R701 33k
R703 1k
C703 0.01u B
R702 27k
Q701 2SD2216J-QR(TX).SO
R705 180
C704 47p CH
R704 680
L702 8.2uH
Q701 AMP
Q702 2SD2216J-QR(TX).SO
R706 1k
Q703 2SD2216J-QR(TX).SO
R709 1k
C706 47p CH 1608
C705 0.01u
R707 1800
R708 390
C707 10p CH 1608
R710 2700
Q702, 703 BUFFER
Q704 UN9111J-(TX).SO
Q704 MP/ME SWITCH
*XMP/ME
C709 0.1u 25V F 1608
R711 820
C708 68p CH
L705 220uH 3225
R716 680
C714 0.001u B 1608
Q705 2SD2216J-QR(TX).SO
R720 390
R719 1k
C715 0.1u F
R721 470
Q705 BUFFER
RAMP_CONT
PCM_REC
AF_REC
RAMP
MASK
R722 1k
R723 1k
R724 1k
R725 4700
R726 1k
R712 2700
R715 4700
R714 10k
C712 0.01u B
R713 2200
L704 10uH
C710 10u 4V
C711 0.01u B 1608
L703 10uH
C713 0.1u B 2012
IC701
VSC
IC701 MB87B110CPFV-G-BND-ER
1 MNT
2 EQO
3 EQ
4 COMP
5 EQ
6 VSS
7 COMP
8 VDD
9 CONT
10 VSS
11 CP
12 736FH
48 HSYN
47 RAMPCONT
46 REC
45 AF
44 RAMP
43 VDD
42 REC
41 VSS
40 HPLS
39 MASK
38 TEST0
37 TEST1
36 TEST2
35 TEST3
34 CLKMNT
33 ID/CS
32 COMINHB
31 VSS
30 SO
29 VDD
28 SI
27 XCS
26 SCK
25 RF
13 XTAL
14 REF
15 INDEX
16 OSC
17 VSS
18 OSC
19 VDD
20 FMCK
21 FMOT
22 MRZMNT
23 CRCMNT
24 XCLR
R727 1k
C719 0.01u B
C720 10u 4V
HI_SI
HI_SO
XCS_VSC
XHI_SCK
SWP
MEMI_HD
XSYS_RST
CN701 70P
1 D_3.2V
2 REC_PCM
3 D_3.2V
4 RAMP_CONT
5 RAMP
6 PB_PCM
7 *XMP/ME
8 PCM_REC
9 AF_REC
10 REG_GND
11 A4.9V
12 REG_GND
13 SWP
14 NC
15 XCS_VSC
16 HI_SI
17 XSYS_RST
18 XHI_SCK
19 NC
20 HI_SO
21 NC
22 CL
23 REG_GND
24 REG_GND
25 REG_GND
26 NC
27 REG_GND
28 NC
29 REG_GND
30 NC
31 REG_GND
32 NC
33 REG_GND
34 MEMI_HD
35 REG_GND
36 NC
37 NC
38 NC
39 MASK
40–70 NC
TO VC-190 BOARD(2/12) CN204
(SEE PAGE 4-23)
CL
MCK
SYSV
SI
SO
JOGVD
XCS
XSCK
OMC1 OMC2 OMC3 OMC4
OC4 OC3 OC2 OC1
OMFLD OMVD OMHD
OFLD OVD OHD
OMY8 OMY7 OMY6 OMY5 OMY4 OMY3 OMY2 OMY1
OY8 OY7 OY6 OY5 OY4 OY3 OY2 OY1
FB702 0uH
TO CONTROL SWITCH BLOCK (SS-B100) CN001
(SEE PAGE 4-68)
CN704 12P
1 N.C.
2 N.C.
3 N.C.
4 XCAM+STBY_SW
5 XCAM+PHOTO_SW
6 XCAM_MODE_SW
7 XPHOTO_FREEZ
8 REG_GND
9 XS/S_SW
10 LANC_DC
11 LANC_SIG
12 XEJECT_SW
TO VC-190 BOARD(12/12) CN1951
(SEE PAGE 4-61)
CN702 16P
1 LANC_DC
2 LANC_SIG
3 XEJECT_SW
4 SW_LED_VTR
5 XS/S_SW
6 XCAM_MODE_SW
7 XCAM+STBY_SW
8 REG_GND
9 MT_5.0V
10 XCAM+PHOTO_SW
11 XIR_LED_ON
12 D_3.2V
13 ZOOM_SW
14 LANC_JACK_IN
15 KEY_AD1
16 KEY_AD0
R743 1k 1608
R744 1k 1608
R745 1k 1608
R746 1k 1608
R747 1k 1608
R748 1k 1608
R749 1k 1608
Q706 SWITCH
Q706 UN9213J-(TX).SO
R750 680
FB713 0uH
FB712 0uH
FB711 0uH
D705 01ZA8.2(TPL3)
D704 XX
D703 01ZA8.2(TPL3)
R756 0
D706 01ZA8.2(TPL3)
C740 XX
C716 XX
C717 XX TA A
C741 XX
IC704 XX
75 CI2
74 CI3
73 VCC
72 POR
71 SRCK
70 XRE
69 RAD
68 XRAE
67 XRSTR
66 YR0
65 YR1
64 YR2
63 YR3
62 YR4
61 YR5
60 YR6
59 YR7
58 GND
57 SWCK
56 XWE
55 WAD
54 XWAE
53 XRSTW
76 CI1
77 CI0
78 TEST3
79 LCDHOLD
80 VCC
81 GND
82 CO3
83 CO2
84 CO1
85 CO0
86 TEST4
87 JOGVD
88 FLDO
89 VDO
90 HDO
91 TBCVDO
92 YO7
93 YO6
94 YO5
95 YO4
96 YO3
97 YO2
98 YO1
99 YO0
100 XRESET
1 MCK
2 GND
3 CL
4 TEST0
5 SYSV
6 XSCK
7 XCS
8 SI
9 SO
10 VCC
11 CR7
12 CR6
13 CR5
14 CR4
15 CR3
16 CR2
17 CR1
18 CR0
19 TBCVDI
20 YI0
21 YI1
22 YI2
23 YI3
OC1 OC2 OC3 OC4
POR SRCK XRE RAD XRAE XRSTR
SWCK XWE WAD XWAE XRSTW
CR7 CR6 CR5 CR4 CR3 CR2 CR1 CR0
OY1 OY2 OY3 OY4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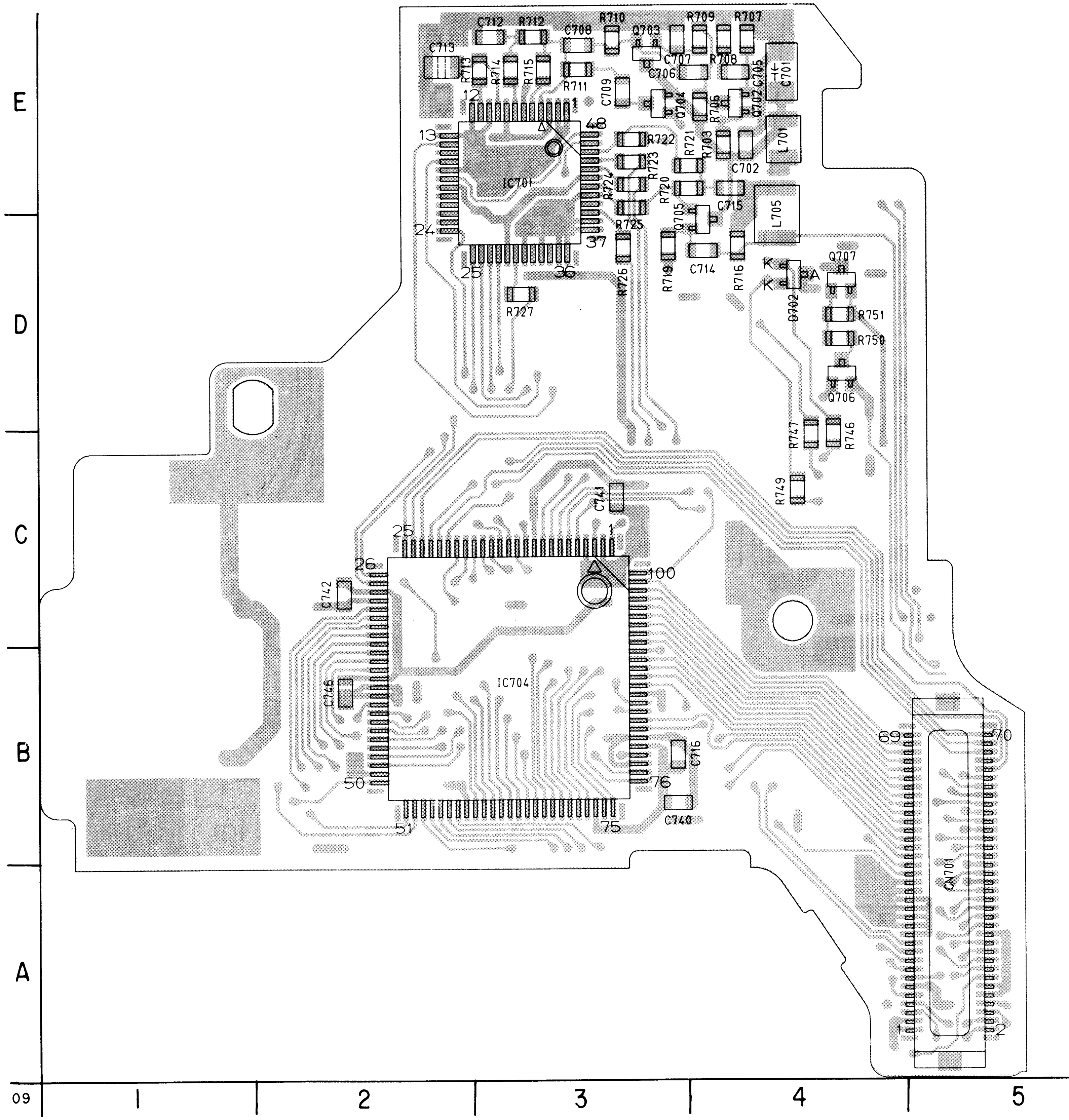
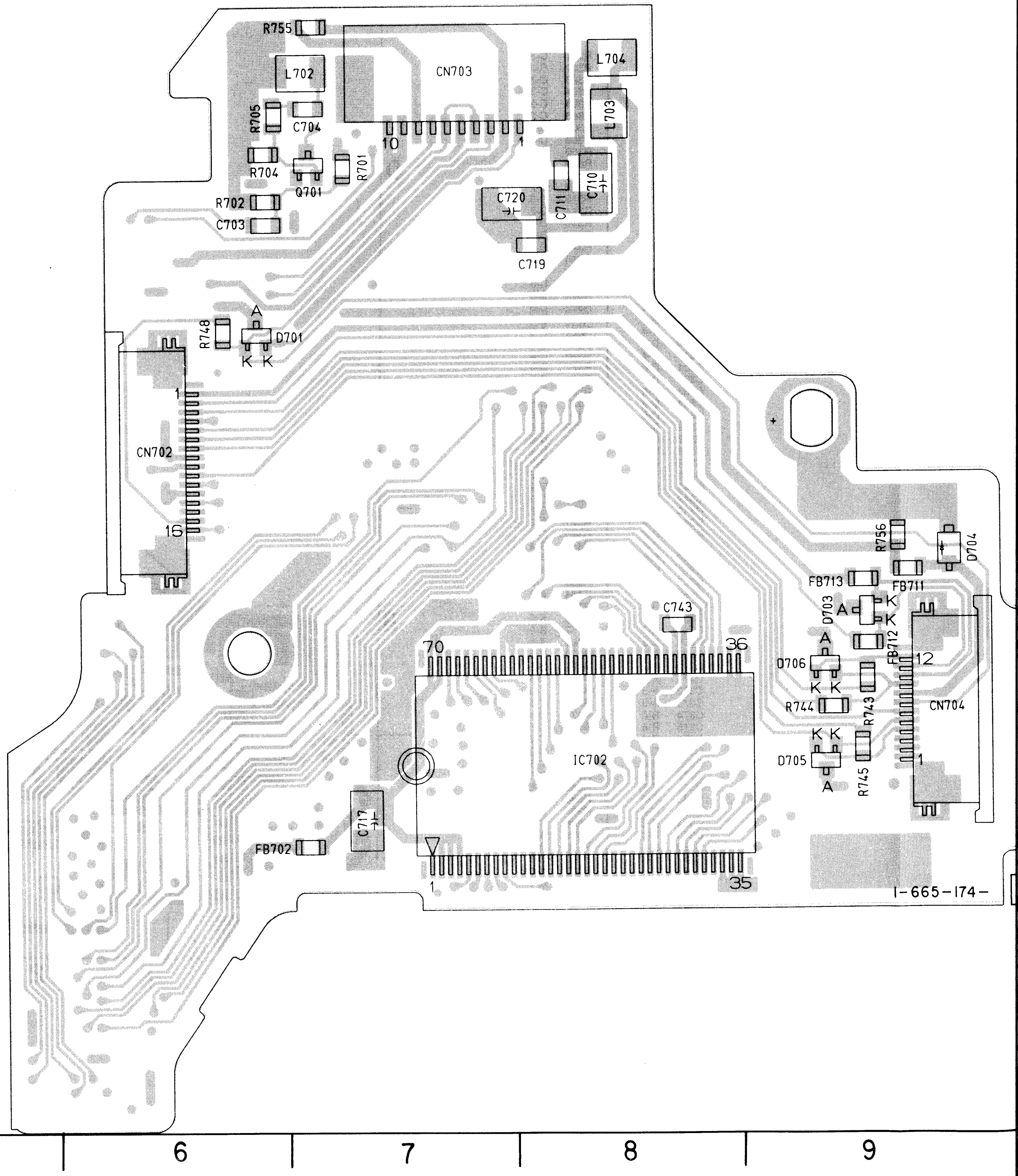
24
25
26
TO CONTROL SWITCH BLOCK
(SS-B100)
CN001
(SEE PAGE 4-68)
TO VC-190 BOARD(12/12)
CN1951
(SEE PAGE 4-61)
TO VTR CONTROL SWITCH BLOCK(FK)
CN001
(SEE PAGE 4-68)
Q704
MP/ME
SWITCH
Q705
BUFFER
Q702, 703
BUFFER
Q706
SWITCH
Q707
LED +5V
SWITCH
IC701
VSC
IC701
MB87B110CPFV-G-BND-ER
IC704
XX
IC702 XX
CN704 12P
CN702 16P
CN703 10P
LND701
FB702
0uH
FB711 0uH
FB712 0uH
FB713 0uH
D701
D702
D703
D704
D705
D706
HI_SI
HI_SO
XCS_VSC
XHI_SCK
SWP
MEMI_HD
XSYS_RST

MM-35 (TIME CODE) PRINTED WIRING BOARD
– Ref No. MM-35 BOARD: 2,000 series –

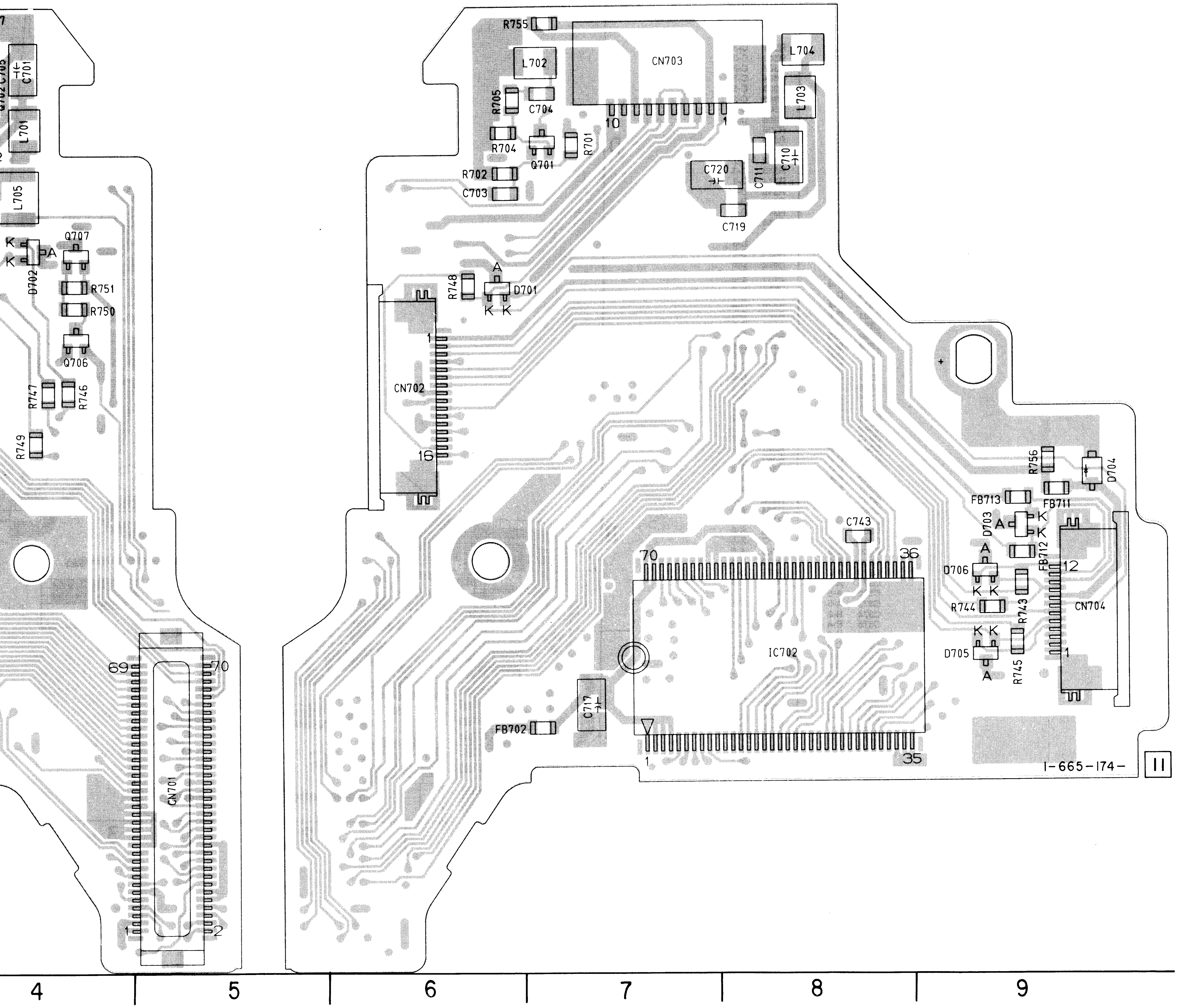
MM-35 BOARD (SIDE B)


E
D
C
B
A
09
1
2
3
4
5
C712
R712
R710
R709
R707
C713
C708
Q703
C707
R708
C706
C705
C701
R713
R714
R715
R711
C709
Q704
R706
Q702
12
1
13
48
R722
R721
R703
L701
R723
C702
IC701
R724
R720
Q705
C715
L705
24
R725
37
25
36
R726
R719
C714
R716
K
K
A
Q707
D702
R727
R751
R750
Q706
R747
R746
R749
C741
25
1
26
100
C742
IC704
C746
69
70
C716
50
76
51
75
C740
CN701
1
2

MM-35 BOARD (SIDE A)


R755
L702
CN703
L704
R705
C704
L703
10
1
R701
R704
Q701
C710
C720
C711
R702
C703
C719
R748
A
D701
K K
1
CN702
16
R756
D704
FB713
FB711
C743
D703
A
K
K
70
36
D706
A
FB712
12
K K
R744
CN704
R743
IC702
K K
D705
A
R745
1
FB702
C717
1
35
1-665-174-
6
7
8
9

MM-35 BOARD (SIDE A)


R755
L702
CN703
L704
L703
R705
C704
R704
Q701
R701
10
1
R702
C703
C720
C711
C710
C719
R748
A
D701
K K
CN702
1
16
Q707
D702
R751
R750
Q706
R747
R746
R749
L701
L705
C701
R756
D704
FB713
FB711
C743
D703
A
K
K
FB712
70
36
D706
A
K K
R744
R743
12
CN704
K K
D705
A
R745
1
IC702
C717
FB702
1
35
69
70
CN701
1
2
1-665-174-
11
4
5
6
7
8
9

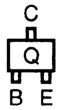
MM-35 BOARD

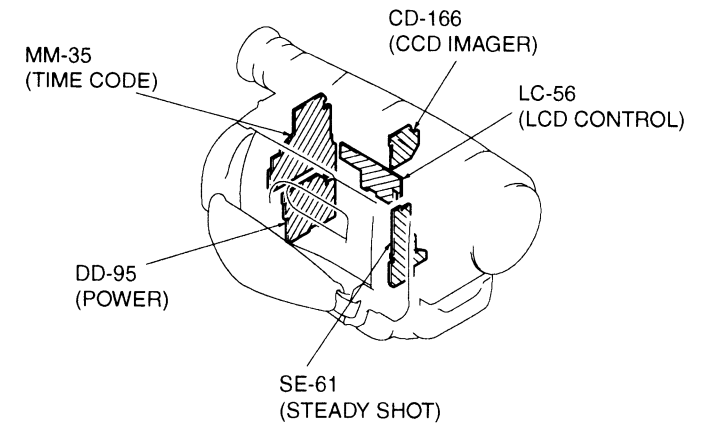
C701	E-4
C702	E-4
C703	D-6
C704	E-7
C705	E-4
C706	E-4
C707	E-3
C708	E-3
C709	E-3
C710	E-8
C711	E-8
C712	E-3
C713	E-2
C714	D-4
C715	E-4
C716	B-2
C717	B-7
C719	D-8
C720	E-8
C740	B-2
C741	C-3
C742	C-2
C743	C-8
C746	B-2
CN701	A-5
CN702	D-6
CN703	E-7
CN704	B-9
D701	D-6
D702	D-4
D703	C-9
D704	C-9
D705	B-9
D706	C-9
FB702	B-7
FB711	C-9
FB712	C-9
FB713	C-9
IC701	E-3
IC702	B-7
IC704	B-2
L701	E-4
L702	E-7
L703	E-8
L704	E-8
L705	D-4
Q701	E-7
Q702	E-4
Q703	E-3
Q704	E-3
Q705	D-4
Q706	D-4
Q707	D-4
R701	E-7
R702	E-6
R703	E-4
R704	E-6
R705	E-6
R706	E-4
R707	E-4
R708	E-4
R709	E-4
R710	E-3
R711	E-3
R712	E-3
R713	E-3
R714	E-3
R715	E-3
R716	D-4
R719	D-3
R720	E-4
R721	E-4
R722	E-3
R723	E-3
R724	E-3
R725	E-3
R726	D-3
R727	D-3
R743	B-9
R744	B-9
R745	B-9
R746	C-4
R747	C-4
R748	D-6
R749	C-4
R750	D-4
R751	D-4
R755	E-7
R756	C-9

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor

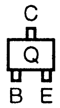


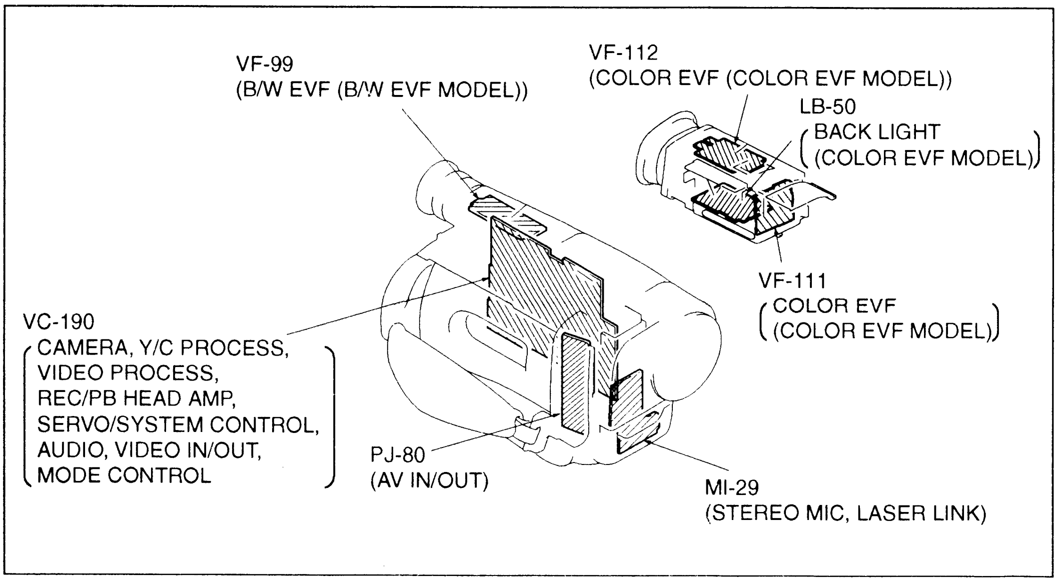

MM-35
(TIME CODE)
CD-166
(CCD IMAGER)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



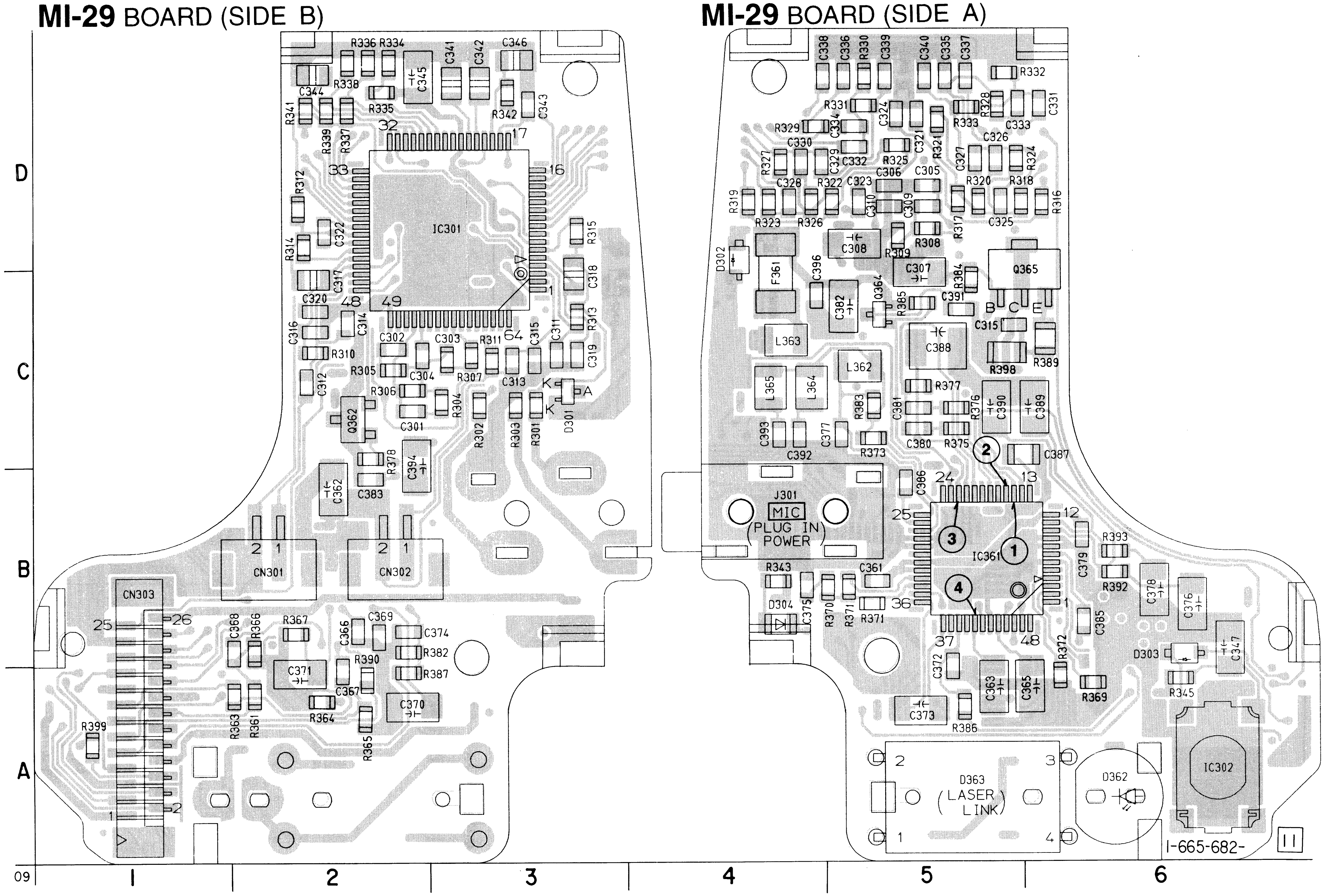

VF-99
(B/W EVF (B/W EVF MODEL))
VF-112
(COLOR EVF (COLOR EVF MODEL))
LB-50
BACK LIGHT
(COLOR EVF MODEL)
VF-111
COLOR EVF
(COLOR EVF MODEL)
VC-190
CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)

MI-29 (STEREO MIC, LASER AVLINK) PRINTED WIRING BOARD

– Ref No. MI-29 BOARD: 4,000 series –

MI-29 BOARD

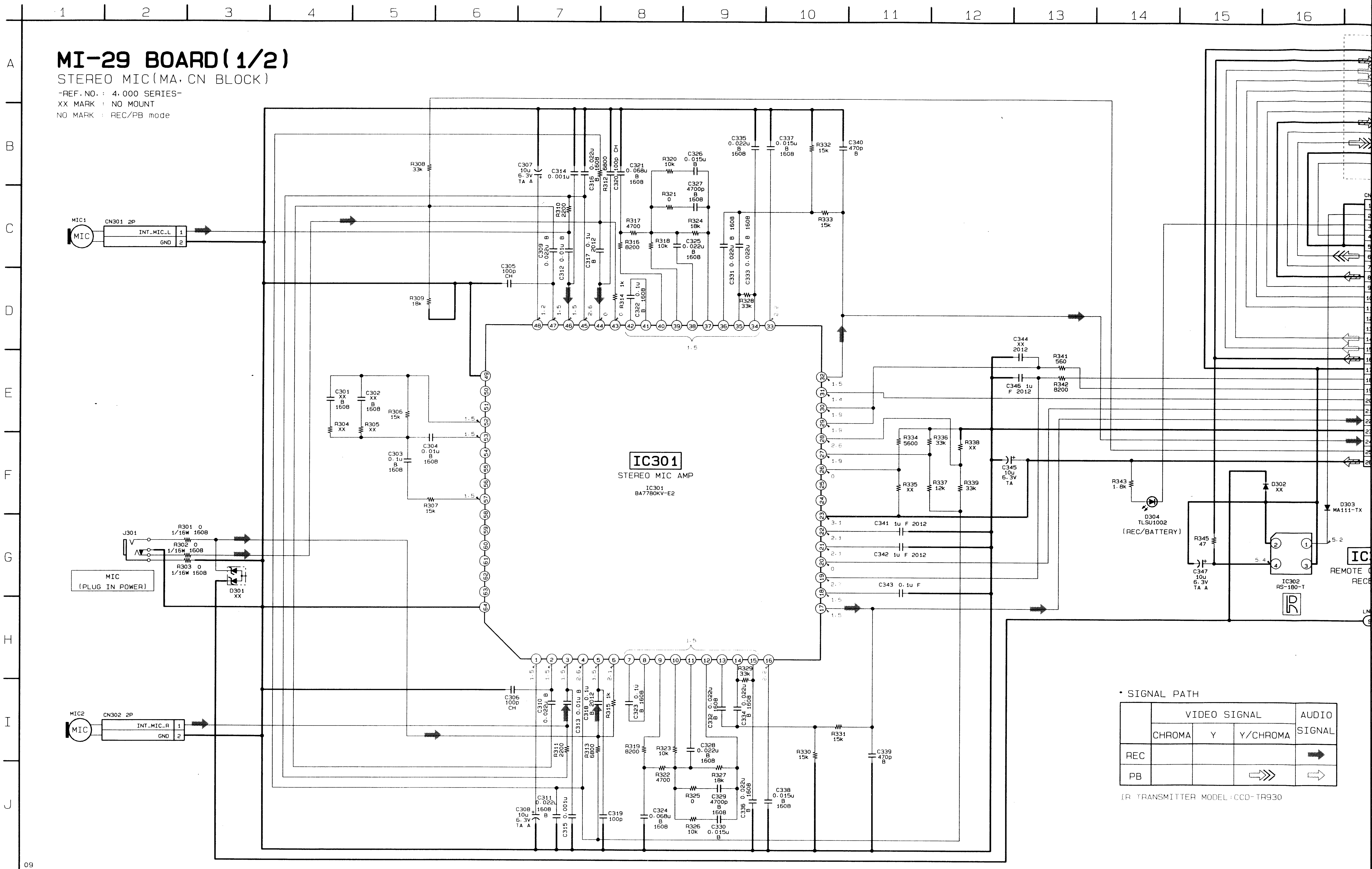
C301	C-2
C302	C-2
C303	C-3
C304	C-2
C305	D-5
C306	D-5
C307	C-5
C308	D-5
C309	D-5
C310	D-5
C311	C-3
C312	C-2
C313	C-3
C314	C-2
C315	C-3
C316	C-2
C317	C-2
C318	C-3
C319	C-3
C320	C-2
C321	D-5
C322	D-2
C323	D-5
C324	D-5
C325	D-5
C326	D-5
C327	D-5
C328	D-4
C329	D-4
C330	D-4
C331	D-6
C332	D-5
C333	D-5
C334	D-5
C335	D-5
C336	D-5
C337	D-5
C338	D-4
C339	D-5
C340	D-5
C341	D-3
C342	D-3
C343	D-3
C344	D-2
C345	D-2
C346	D-3
C347	B-6
C361	B-5
C362	B-2
C363	A-5
C365	B-2
C366	B-2
C367	A-7
C368	B-2
C369	B-2
C370	A-2
C371	A-2
C372	A-5
C373	A-5
C374	B-2
C375	B-4
C376	B-6
C377	C-5
C378	B-6
C379	B-6
C380	C-5
C381	C-5
C382	C-4
C383	B-2
C385	B-6
C386	B-5
C387	C-5
C388	C-5
C389	C-6
C390	C-5
C391	C-5
C392	C-4
C393	C-4
C394	B-2
C395	C-5
CN301	B-2
CN302	B-2
CN303	A-1
D301	C-3
D302	D-4
D303	B-6
D304	B-4
D362	A-6
D363	A-5
F361	C-4
IC301	D-3
IC302	A-6
IC361	B-5
J301	B-4
L362	C-5
L363	C-4
L364	C-4
L365	C-4
Q362	C-2
Q364	C-5
Q365	C-5
R301	C-3
R302	C-3
R303	C-3
R304	C-3
R305	C-2
R306	C-2
R307	C-3
R308	D-5
R309	D-5
R310	C-2
R311	C-3
R312	D-2
R313	C-3
R314	D-2
R315	D-3
R316	D-6
R317	D-5
R318	D-5
R319	D-4
R320	D-5
R321	D-5
R322	D-5
R323	D-4
R324	D-5
R325	D-5
R326	D-4
R327	D-4
R328	D-5
R329	D-4
R330	D-5
R331	D-5
R332	D-5
R333	D-5
R334	D-2
R335	D-2
R336	D-2
R337	D-2
R338	D-2
R339	D-2
R341	D-2
R342	D-3
R343	B-4
R345	A-6
R361	A-2
R363	A-2
R364	A-2
R365	A-2
R366	B-2
R367	B-2
R369	A-6
R370	B-5
R371	B-5
R372	A-6
R373	C-5
R375	C-5
R376	C-5
R377	C-5
R378	C-2
R382	B-2
R383	C-5
R384	C-5
R385	C-5
R386	A-5
R387	A-2
R389	C-5
R390	A-2
R392	B-6
R393	B-6
R397	A-6
R398	C-5
R399	A-1


MI-29 BOARD (SIDE B)
MI-29 BOARD (SIDE A)
D
C
B
A
09
1
2
3
4
5
6
IC301
IC302
IC361
CN301
CN302
CN303
J301
MIC
(PLUG IN POWER)
D363
(LASER LINK)
D362
Q362
Q364
Q365
F361
L362
L363
L364
L365
D301
D302
D303
D304
1-665-682-
11
①
②
③
④
32
17
33
16
48
49
64
1
25
26
2
24
13
12
36
37
48
B C E
K
A

MI-29 BOARD(1/2)

STEREO MIC(MA, CN BLOCK)

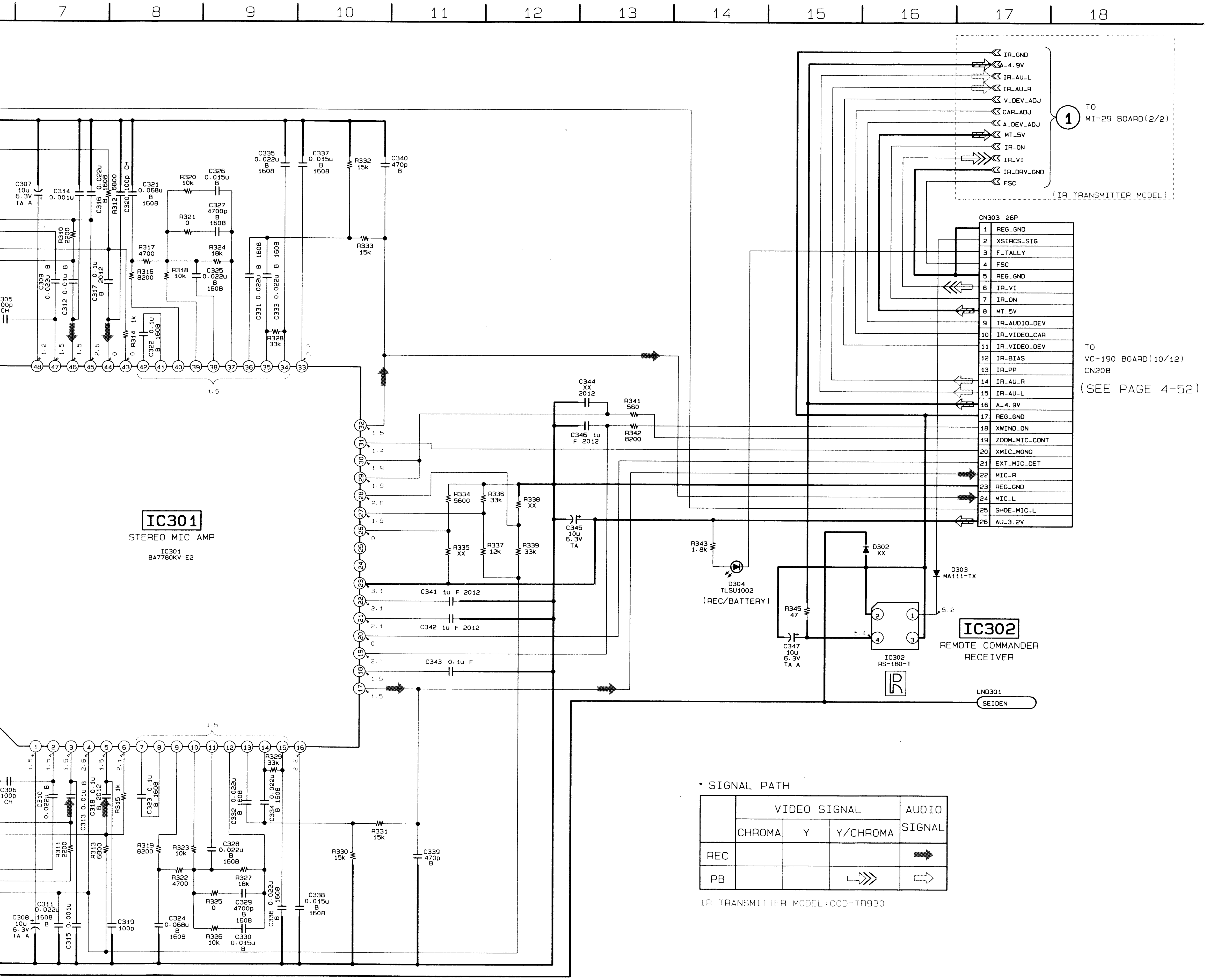
-REF. NO. : 4,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
MIC1
MIC
CN301 2P
INT_MIC_L
GND
MIC2
CN302 2P
INT_MIC_R
J301
R301 0 1/16W 1608
R302 0 1/16W 1608
R303 0 1/16W 1608
D301 XX
MIC (PLUG IN POWER)
R308 33k
R309 18k
C305 100p CH
C306 100p CH
C307 10u 6.3V TA A
C314 0.001u
C316 0.022u B 1608
R312 6800
C320 100p CH
C321 0.068u B 1608
R320 10k
C326 0.015u B
C327 4700p B 1608
R321 0
R317 4700
R324 18k
R316 8200
R318 10k
C325 0.022u B 1608
C335 0.022u B 1608
C337 0.015u B 1608
R332 15k
C340 470p B
R333 15k
C331 0.022u B 1608
C333 0.022u B 1608
R328 33k
R310 2200
C309 0.022u B
C312 0.01u B
C317 0.1u 2012 B
R314 1k
C322 0.1u B 1608
C301 XX B 1608
C302 XX B 1608
R304 XX
R305 XX
R306 15k
C304 0.01u B 1608
C303 0.1u B 1608
R307 15k
IC301
STEREO MIC AMP
IC301 BA7780KV-E2
C341 1u F 2012
C342 1u F 2012
C343 0.1u F
C344 XX 2012
R341 560
C346 1u F 2012
R342 8200
R334 5600
R336 33k
R338 XX
R335 XX
R337 12k
R339 33k
C345 10u 6.3V TA
R343 1.8k
D304 TLSU1002 (REC/BATTERY)
D302 XX
D303 MA111-TX
R345 47
C347 10u 6.3V TA A
IC302 RS-180-T
REMOTE
C310 0.022u B
C313 0.01u B
C318 0.1u B 2012
R315 1k
C323 0.1u B 1608
C332 0.022u 1608
C334 0.022u B 1608
R329 33k
R331 15k
R330 15k
C339 470p B
R311 2200
R313 6800
R319 8200
R323 10k
C328 0.022u B 1608
R322 4700
R327 18k
R325 0
C329 4700p B 1608
C336 0.022u B 1608
C338 0.015u B 1608
C308 10u 6.3V TA A
C311 0.022u 1608 B
C315 0.001u
C319 100p
C324 0.068u B 1608
R326 10k
C330 0.015u B

・SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨»	⇨

IR TRANSMITTER MODEL : CCD-TR930


7
8
9
10
11
12
13
14
15
16
17
18
IR_GND
A_4.9V
IR_AU_L
IR_AU_R
V_DEV_ADJ
CAR_ADJ
A_DEV_ADJ
MT_5V
IR_ON
IR_VI
IR_DRV_GND
FSC
①
TO
MI-29 BOARD(2/2)
(IR TRANSMITTER MODEL)
CN303 26P
1 REG_GND
2 XSIRCS_SIG
3 F_TALLY
4 FSC
5 REG_GND
6 IR_VI
7 IR_ON
8 MT_5V
9 IR_AUDIO_DEV
10 IR_VIDEO_CAR
11 IR_VIDEO_DEV
12 IR_BIAS
13 IR_PP
14 IR_AU_R
15 IR_AU_L
16 A_4.9V
17 REG_GND
18 XWIND_ON
19 ZOOM_MIC_CONT
20 XMIC_MONO
21 EXT_MIC_DET
22 MIC_R
23 REG_GND
24 MIC_L
25 SHOE_MIC_L
26 AU_3.2V
TO
VC-190 BOARD(10/12)
CN208
(SEE PAGE 4-52)
IC301
STEREO MIC AMP
IC301
BA7780KV-E2
IC302
REMOTE COMMANDER
RECEIVER
IC302
RS-180-T
D302
XX
D303
MA111-TX
D304
TLSU1002
(REC/BATTERY)
R343 1.8k
R345 47
C347 10u 6.3V TA A
LND301
SEIDEN
C344 XX 2012
C346 1u F 2012
R341 560
R342 8200
C345 10u 6.3V TA
R334 5600
R336 33k
R338 XX
R335 XX
R337 12k
R339 33k
C341 1u F 2012
C342 1u F 2012
C343 0.1u F
C307 10u 6.3V TA A
C314 0.001u
C316 0.022u B 1608
R312 6800
C320 100p CH
C321 0.068u B 1608
R320 10k
C326 0.015u B
C327 4700p B 1608
R321 0
R317 4700
R324 18k
R318 10k
C325 0.022u B 1608
R315 8200
C335 0.022u B 1608
C337 0.015u B 1608
R332 15k
C340 470p B
R333 15k
C331 0.022u B 1608
C333 0.022u B 1608
R328 33k
R310 2200
C309 0.022u B
C312 0.01u B
C317 0.1u 2012 B
R314 1k
C322 0.1u B 1608
C305 100p CH
C306 100p CH
C310 0.022u B
C313 0.01u B
C318 0.1u B 2012
R315 1k
C323 0.1u B 1608
C332 0.022u B 1608
C334 0.022u B 1608
R329 33k
R331 15k
R330 15k
C339 470p B
R311 2200
R313 6800
R319 8200
R323 10k
C328 0.022u B 1608
R322 4700
R327 18k
R325 0
C329 4700p B 1608
C336 0.022u B 1608
C338 0.015u B 1608
C311 0.022u 1608 B
C308 10u 6.3V TA A
C315 0.001u
C319 100p
C324 0.068u B 1608
R326 10k
C330 0.015u B
5.2
5.4
1.5
1.4
1.9
2.6
3.1
2.1
0

• SIGNAL PATH

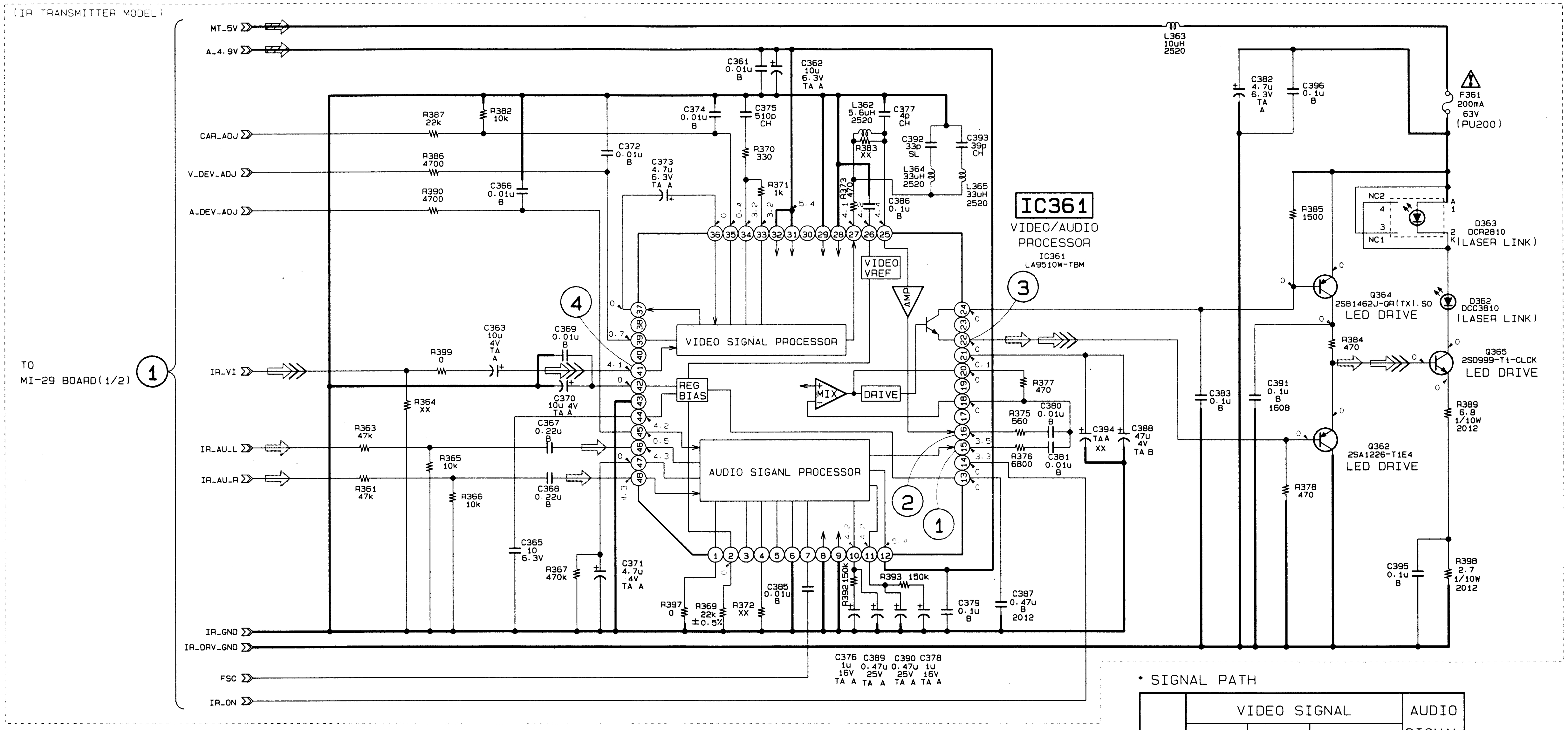
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨	⇨

IR TRANSMITTER MODEL:CCD-TR930

MI-29 BOARD(2/2)

LASER LINK(IR BLOCK)

-REF.NO.: 4,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode


1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H
(IR TRANSMITTER MODEL)
TO MI-29 BOARD(1/2)
①
MT_5V
A_4.9V
CAR_ADJ
V_DEV_ADJ
A_DEV_ADJ
IR_VI
IR_AU_L
IR_AU_R
IR_GND
IR_DRV_GND
FSC
IR_ON
R387 22k
R382 10k
R386 4700
R390 4700
C366 0.01u B
R399 0
C363 10u 4V TA A
C369 0.01u B
C370 10u 4V TA A
R364 XX
R363 47k
R365 10k
R361 47k
R366 10k
C367 0.22u B
C368 0.22u B
C365 10 6.3V
R367 470k
C371 4.7u 4V TA A
C372 0.01u B
C373 4.7u 6.3V TA A
C361 0.01u B
C362 10u 6.3V TA A
C374 0.01u B
C375 510p CH
R370 330
R371 1K
L362 5.6uH 2520
C377 4p CH
R383 XX
C392 33p SL
C393 39p CH
L364 33uH 2520
L365 33uH 2520
R373 470
C386 0.1u B
IC361
VIDEO/AUDIO PROCESSOR
IC361 LA9510W-TBM
VIDEO VREF
AMP
VIDEO SIGNAL PROCESSOR
REG BIAS
MIX
DRIVE
AUDIO SIGANL PROCESSOR
②
③
④
R377 470
R375 560
C380 0.01u B
R376 6800
C381 0.01u B
C394 TA A XX
C388 47u 4V TA B
R397 0
R369 22k ±0.5%
R372 XX
C385 0.01u B
R392 150k
R393 150k
C379 0.1u B
C387 0.47u B 2012
C376 1u 16V TA A
C389 0.47u 25V TA A
C390 0.47u 25V TA A
C378 1u 16V TA A
L363 10uH 2520
C382 4.7u 6.3V TA A
C396 0.1u B
F361 200mA 63V (PU200)
R385 1500
D363 DCR2810 (LASER LINK)
NC2
NC1
Q364 2SB1462J-QR(TX).SO LED DRIVE
D362 DCC3810 (LASER LINK)
R384 470
Q365 2SD999-T1-CLCK LED DRIVE
C383 0.1u B
C391 0.1u B 1608
R389 6.8 1/10W 2012
Q362 2SA1226-T1E4 LED DRIVE
R378 470
C395 0.1u B
R398 2.7 1/10W 2012
09

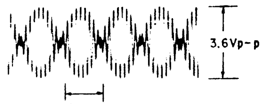
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇒⇒	⇒

IR TRANSMITTER MODEL:CCD-TR930

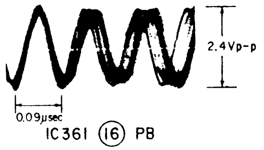
MI-29 BOARD (IR BLOCK)

①



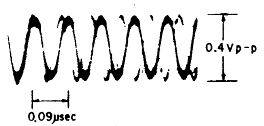
IC361 ⑮ PB

②



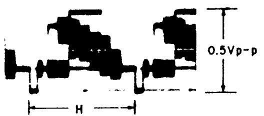
IC361 ⑯ PB

③

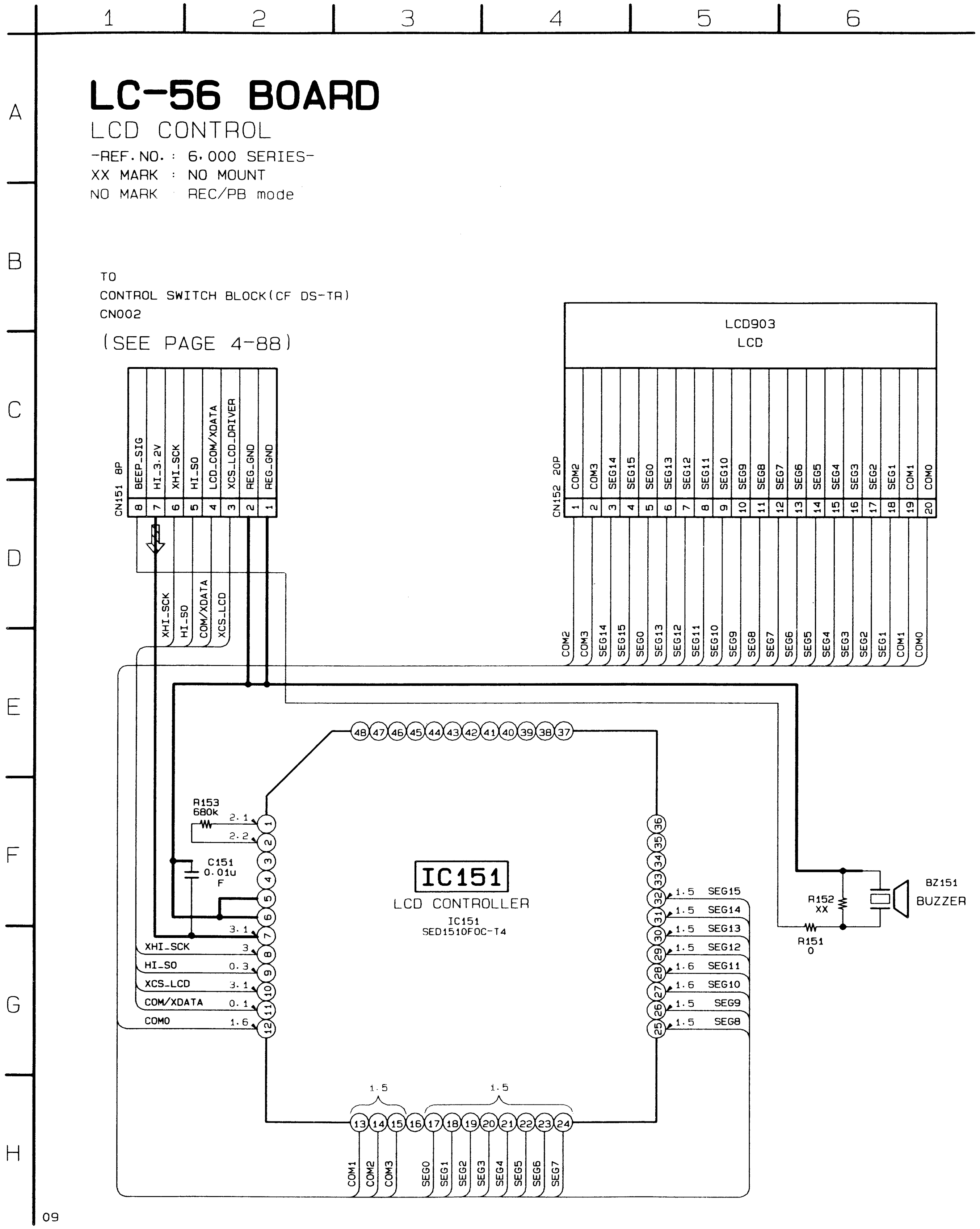


IC361 ㉒ PB

④



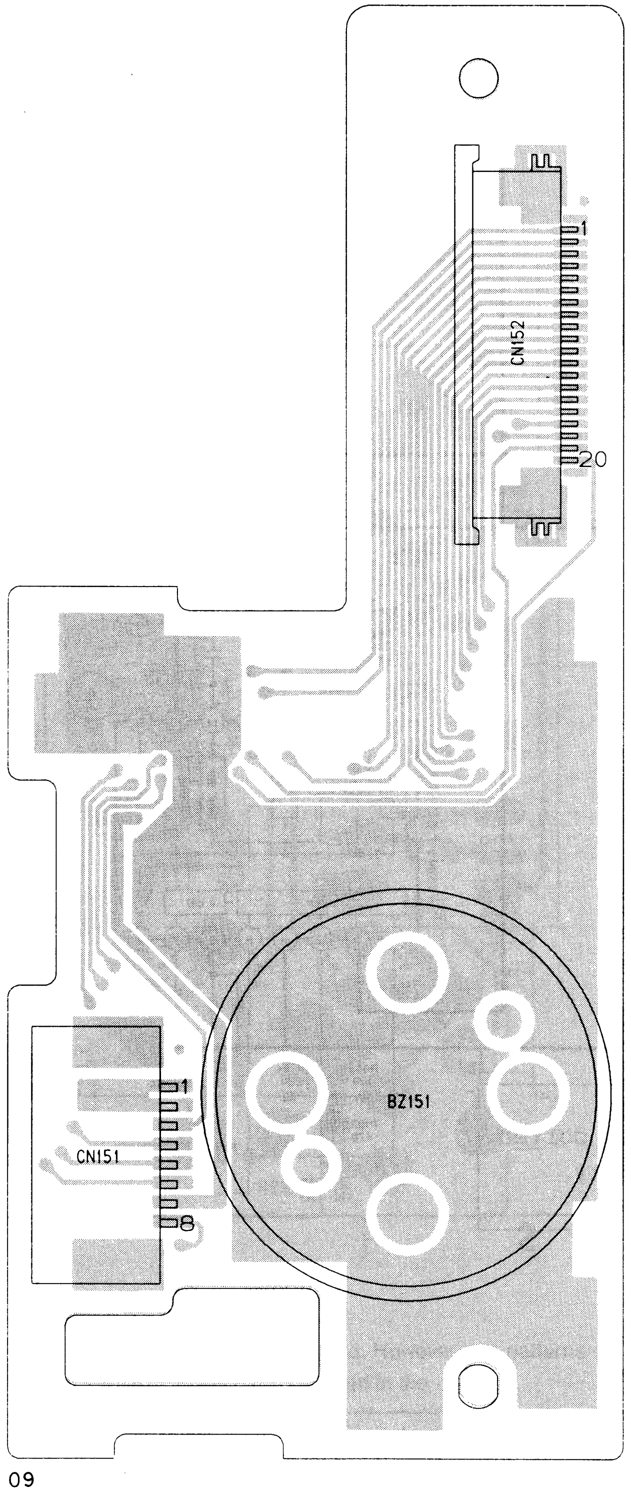
IC361 ㊶ PB


1
2
3
4
5
6
A
B
C
D
E
F
G
H
LC-56 BOARD
LCD CONTROL
-REF.NO.: 6,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
TO
CONTROL SWITCH BLOCK(CF DS-TR)
CN002
(SEE PAGE 4-88)
CN151 8P
8 BEEP_SIG
7 HI_3.2V
6 XHI_SCK
5 HI_SO
4 LCD_COM/XDATA
3 XCS_LCD_DRIVER
2 REG_GND
1 REG_GND
XHI_SCK
HI_SO
COM/XDATA
XCS_LCD
LCD903
LCD
CN152 20P
1 COM2
2 COM3
3 SEG14
4 SEG15
5 SEG0
6 SEG13
7 SEG12
8 SEG11
9 SEG10
10 SEG9
11 SEG8
12 SEG7
13 SEG6
14 SEG5
15 SEG4
16 SEG3
17 SEG2
18 SEG1
19 COM1
20 COM0
R153
680k
C151
0.01u
F
2.1
2.2
3.1
XHI_SCK 3
HI_SO 0.3
XCS_LCD 3.1
COM/XDATA 0.1
COM0 1.6
IC151
LCD CONTROLLER
IC151
SED1510F0C-T4
1.5 SEG15
1.5 SEG14
1.5 SEG13
1.5 SEG12
1.6 SEG11
1.6 SEG10
1.5 SEG9
1.5 SEG8
1.5
1.5
COM1
COM2
COM3
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
R152
XX
R151
0
BZ151
BUZZER
09

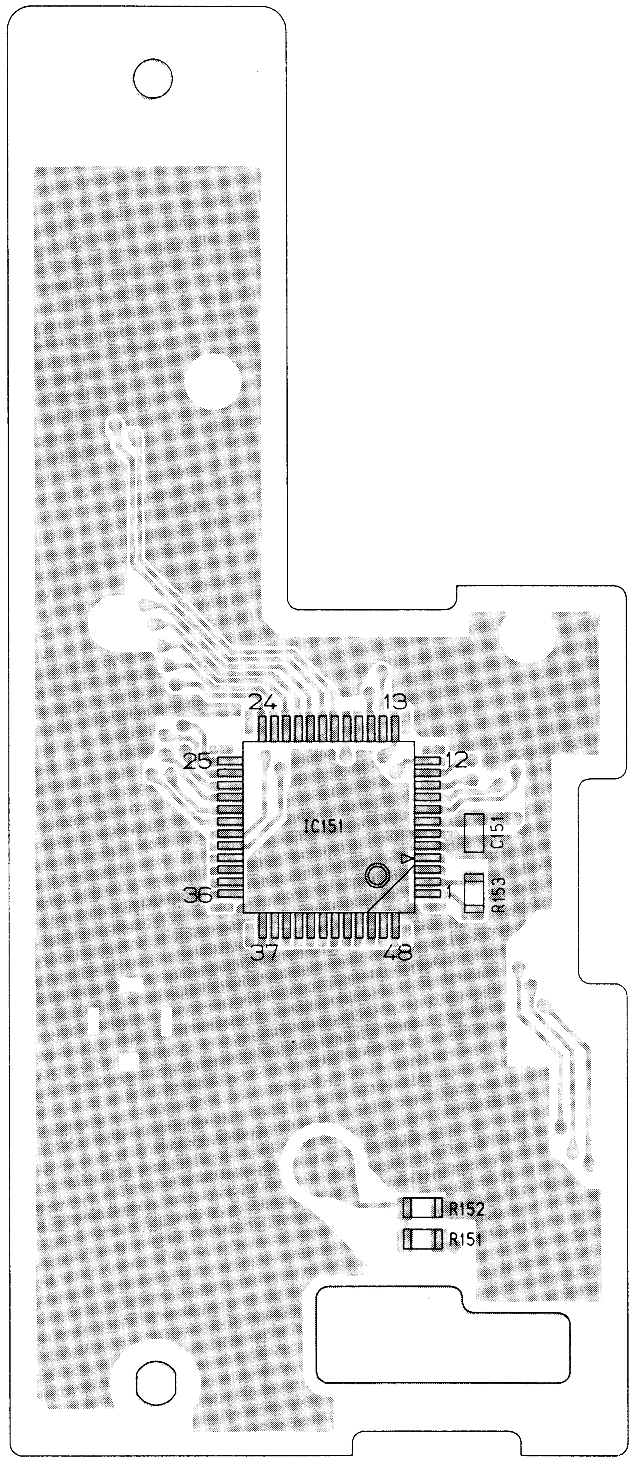
LC-56 (LCD CONTROL) PRINTED WIRING BOARD

– Ref No. LC-56 BOARD: 6,000 series –

LC-56 BOARD (SIDE B)


CN152
1
20
CN151
1
8
BZ151
09

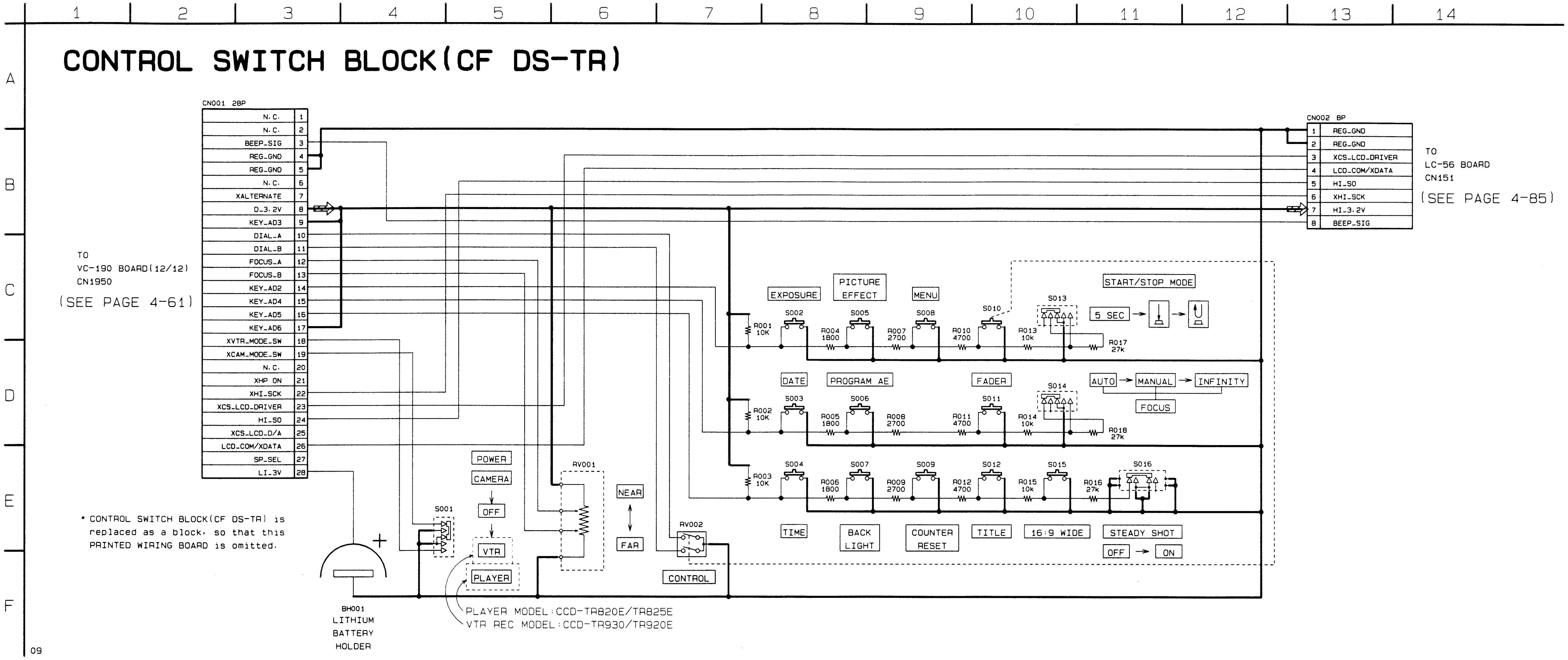
LC-56 BOARD (SIDE A)


24
13
25
12
IC151
C151
R153
36
1
37
48
R152
R151

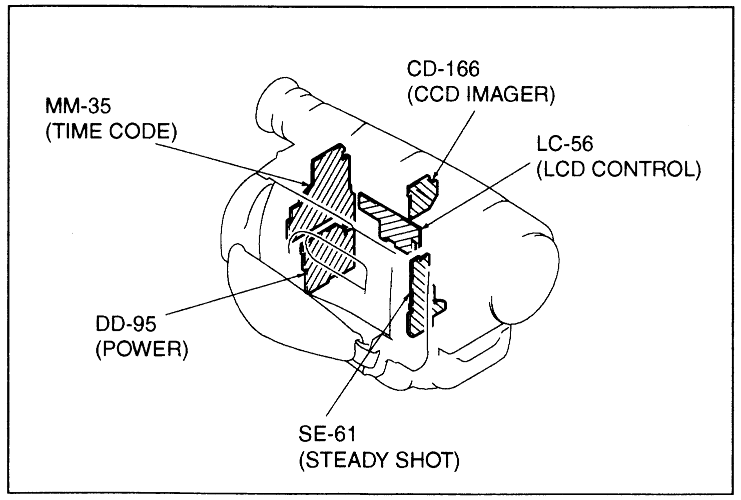
- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

CONTROL SWITCH BLOCK(CF DS-TR)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
09
CN001 28P
N.C. 1
N.C. 2
BEEP_SIG 3
REG_GND 4
REG_GND 5
N.C. 6
XALTERNATE 7
D_3.2V 8
KEY_AD3 9
DIAL_A 10
DIAL_B 11
FOCUS_A 12
FOCUS_B 13
KEY_AD2 14
KEY_AD4 15
KEY_AD5 16
KEY_AD6 17
XVTR_MODE_SW 18
XCAM_MODE_SW 19
N.C. 20
XHP ON 21
XHI_SCK 22
XCS_LCD_DRIVER 23
HI_SO 24
XCS_LCD_D/A 25
LCD_COM/XDATA 26
SP_SEL 27
LI_3V 28
TO
VC-190 BOARD(12/12)
CN1950
(SEE PAGE 4-61)
CN002 8P
1 REG_GND
2 REG_GND
3 XCS_LCD_DRIVER
4 LCD_COM/XDATA
5 HI_SO
6 XHI_SCK
7 HI_3.2V
8 BEEP_SIG
TO
LC-56 BOARD
CN151
(SEE PAGE 4-85)
EXPOSURE
PICTURE EFFECT
MENU
START/STOP MODE
S002
S005
S008
S010
S013
5 SEC
R001 10K
R004 1800
R007 2700
R010 4700
R013 10k
R017 27k
DATE
PROGRAM AE
FADER
AUTO
MANUAL
INFINITY
FOCUS
S003
S006
S011
S014
R002 10K
R005 1800
R008 2700
R011 4700
R014 10k
R018 27k
S004
S007
S009
S012
S015
S016
R003 10K
R006 1800
R009 2700
R012 4700
R015 10k
R016 27k
TIME
BACK LIGHT
COUNTER RESET
TITLE
16:9 WIDE
STEADY SHOT
OFF
ON
POWER
CAMERA
OFF
VTR
PLAYER
S001
RV001
NEAR
FAR
RV002
CONTROL
+
BH001
LITHIUM
BATTERY
HOLDER
PLAYER MODEL:CCD-TR820E/TR825E
VTR REC MODEL:CCD-TR930/TR920E

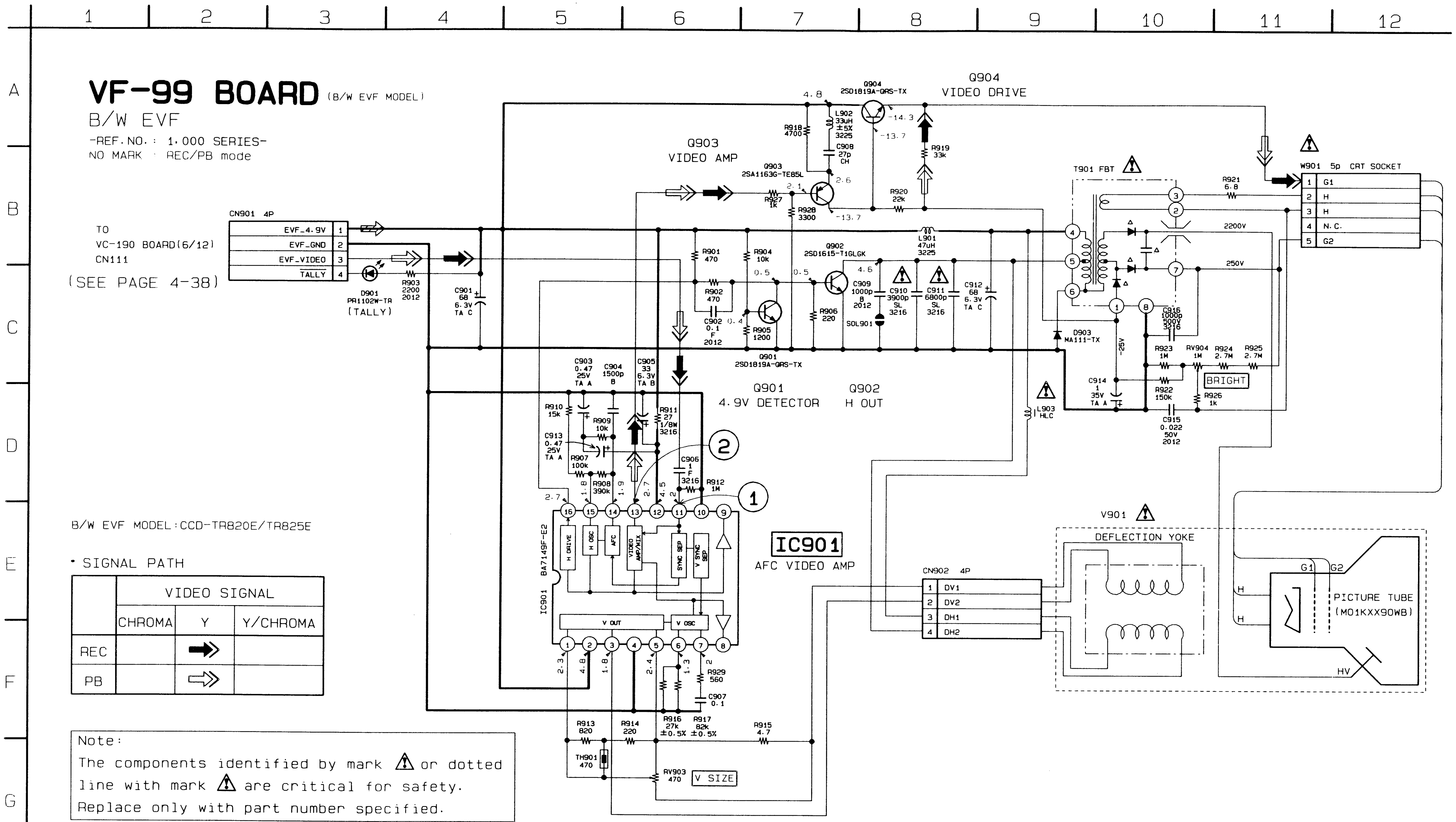
• CONTROL SWITCH BLOCK(CF DS-TR) is replaced as a block, so that this PRINTED WIRING BOARD is omitted.


CD-166
(CCD IMAGER)
MM-35
(TIME CODE)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

VF-99 BOARD (B/W EVF MODEL)

B/W EVF

-REF.NO.: 1,000 SERIES-
NO MARK : REC/PB mode


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
TO
VC-190 BOARD(6/12)
CN111
(SEE PAGE 4-38)
CN901 4P
EVF_4.9V
EVF_GND
EVF_VIDEO
TALLY
D901
PR1102W-TR
(TALLY)
R903
2200
2012
C901
68
6.3V
TA C
Q903
VIDEO AMP
Q903
2SA1163G-TE85L
Q904
2SD1819A-QRS-TX
Q904
VIDEO DRIVE
R918
4700
L902
33uH
±5%
3225
C908
27p
CH
R927
1k
R928
3300
R919
33k
R920
22k
R901
470
R904
10k
R902
470
C902
0.1
F
2012
R905
1200
Q902
2SD1615-T1GLGK
C909
1000p
B
2012
C910
3900p
SL
3216
C911
6800p
SL
3216
C912
68
6.3V
TA C
L901
47uH
3225
R906
220
SOL901
Q901
2SD1819A-QRS-TX
Q901
4.9V DETECTOR
Q902
H OUT
T901 FBT
2200V
250V
D903
MA111-TX
-25V
C916
1000p
500V
3216
R921
6.8
W901 5p CRT SOCKET
G1
H
H
N.C.
G2
R923
1M
RV904
1M
R924
2.7M
R925
2.7M
BRIGHT
C914
1
35V
TA A
R922
150k
R926
1k
C915
0.022
50V
2012
L903
HLC
C903
0.47
25V
TA A
C904
1500p
B
C905
33
6.3V
TA B
R910
15k
R909
10k
C913
0.47
25V
TA A
R907
100k
R908
390k
R911
27
1/8W
3216
C906
1
F
3216
R912
1M
IC901
BA7149F-E2
H DRIVE
H OSC
AFC
VIDEO AMP/MIX
SYNC SEP
V SYNC SEP
V OUT
V OSC
IC901
AFC VIDEO AMP
R929
560
C907
0.1
R913
820
R914
220
R916
27k
±0.5%
R917
82k
±0.5%
R915
4.7
TH901
470
RV903
470
V SIZE
V901
DEFLECTION YOKE
CN902 4P
DV1
DV2
DH1
DH2
G1
G2
H
H
HV
PICTURE TUBE
(M01KXX90WB)

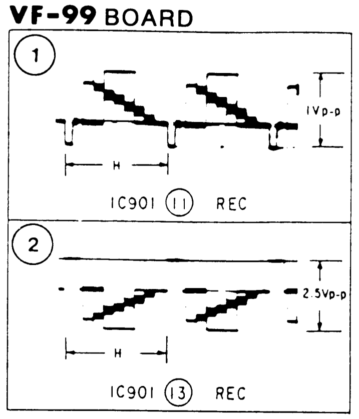
B/W EVF MODEL: CCD-TR820E/TR825E

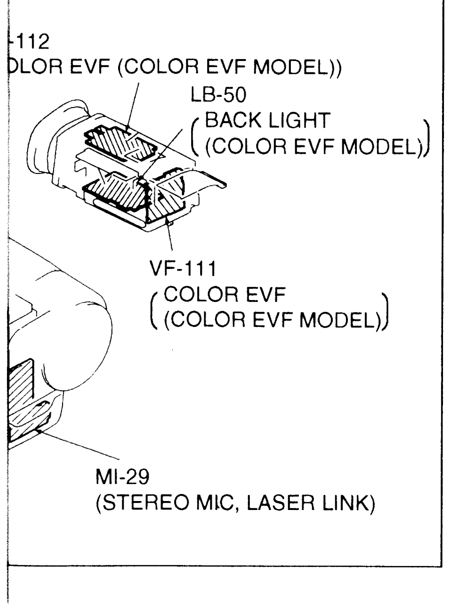
- SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

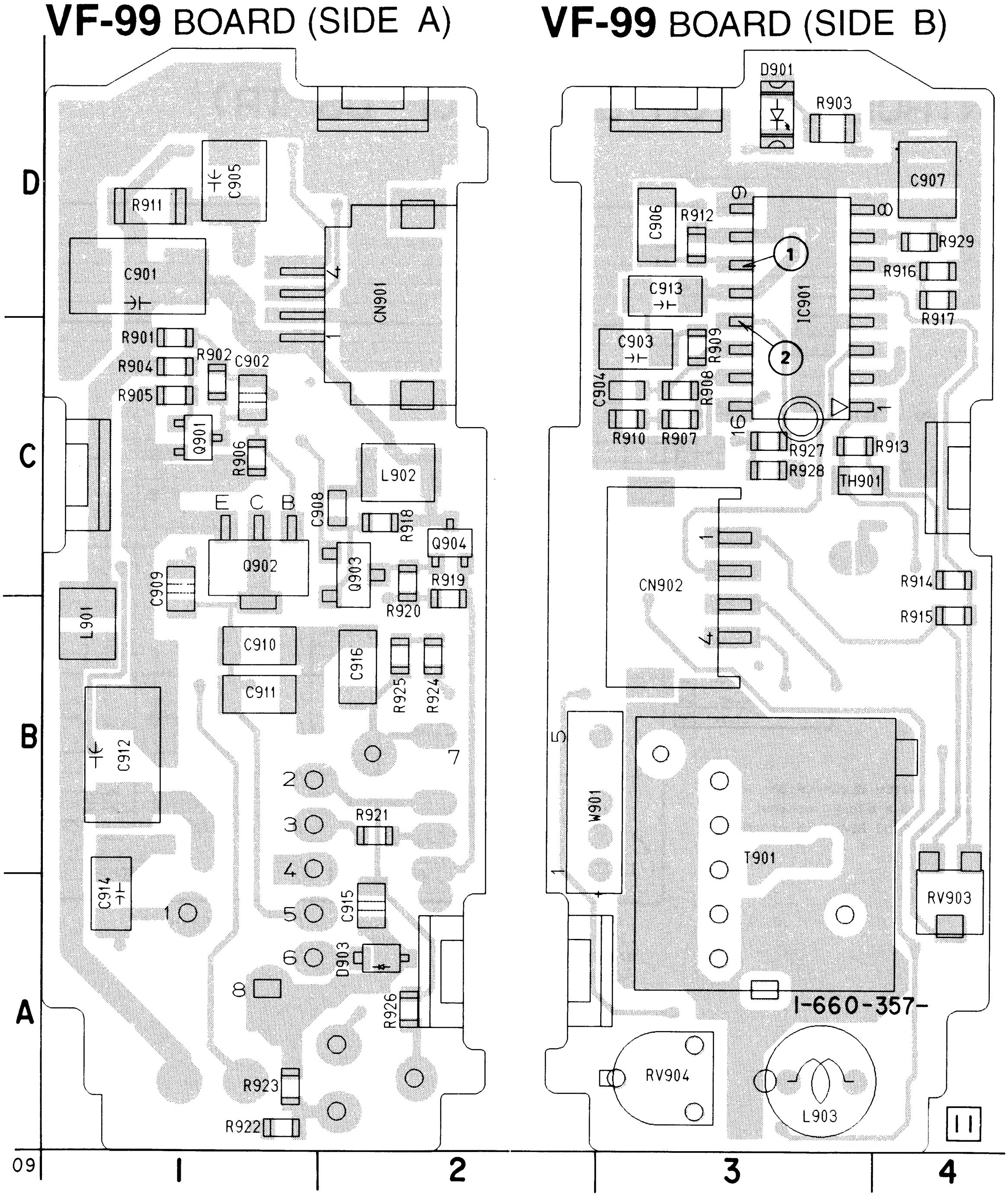
VF-99 BOARD


①
1Vp-p
H
IC901 ⑪ REC
②
2.5Vp-p
H
IC901 ⑬ REC


-112
OLOR EVF (COLOR EVF MODEL))
LB-50
BACK LIGHT
(COLOR EVF MODEL)
VF-111
COLOR EVF
(COLOR EVF MODEL)
MI-29
(STEREO MIC, LASER LINK)

VF-99 (B/W EVF (B/W EVF MODEL)) PRINTED WIRING BOARD

– Ref No. VF-99 BOARD: 1,000 series –

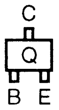

VF-99 BOARD (SIDE A)
VF-99 BOARD (SIDE B)
D
C
B
A
09
1
2
3
4
R911
C905
C901
CN901
R901
R904
R902
C902
R905
Q901
R906
L902
E C B
C908
R918
Q904
Q902
Q903
R919
C909
R920
L901
C910
C916
C911
R925
R924
C912
7
2
3
R921
4
C914
1
5
C915
6
D903
8
R926
R923
R922
D901
R903
C907
C906
R912
R929
①
R916
C913
IC901
R917
C903
R909
②
C904
R908
R910
R907
R927
R913
R928
TH901
CN902
R914
R915
W901
T901
RV903
1-660-357-
RV904
L903
11

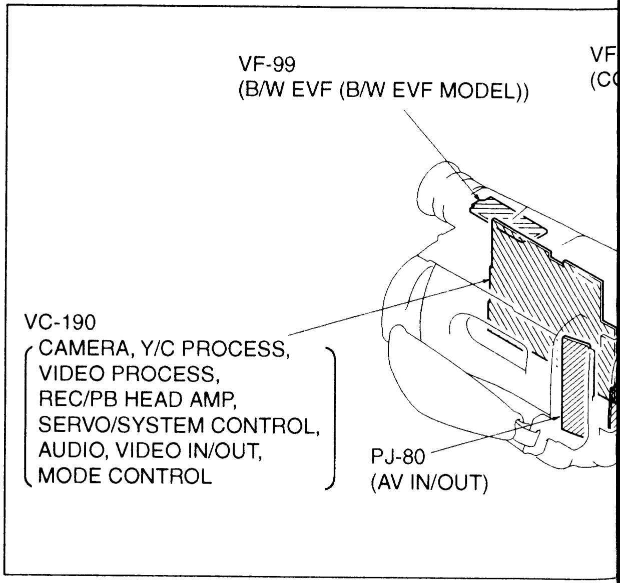
VF-99 BOARD	
C901	D-1
C902	C-1
C903	C-3
C904	C-3
C905	D-1
C906	D-3
C907	D-4
C908	C-2
C909	C-1
C910	B-1
C911	B-1
C912	B-1
C913	D-3
C914	A-1
C915	A-2
C916	B-2
CN901	D-2
CN902	C-3
D901	D-3
D903	A-2
IC901	D-3
L901	B-1
L902	C-2
L903	A-3
Q901	C-1
Q902	C-1
Q903	C-2
Q904	C-2
R901	C-1
R902	C-1
R903	D-3
R904	C-1
R905	C-1
R906	C-1
R907	C-3
R908	C-3
R909	C-3
R910	C-3
R911	D-1
R912	D-3
R913	C-3
R914	C-4
R915	B-4
R916	D-4
R917	D-4
R918	C-2
R919	C-2
R920	C-2
R921	B-2
R922	A-1
R923	A-1
R924	B-2
R925	B-2
R926	A-2
R927	C-3
R928	C-3
R929	D-4
RV903	A-4
RV904	A-3
T901	B-3
TH901	C-3
W901	B-3

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



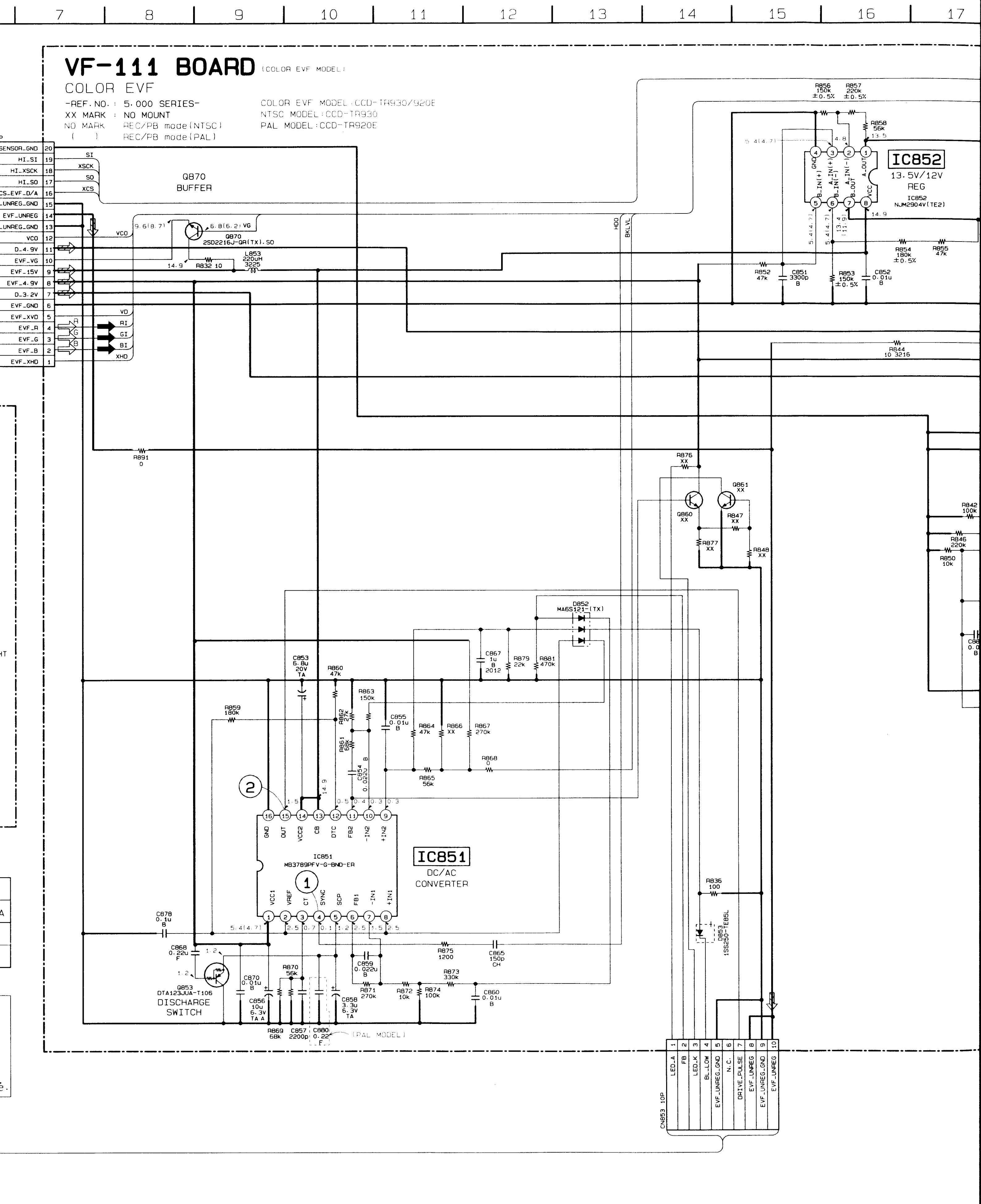

VF-99
(B/W EVF (B/W EVF MODEL))
VF
(C
VC-190
CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)

VF-111 BOARD (COLOR EVF MODEL)

COLOR EVF

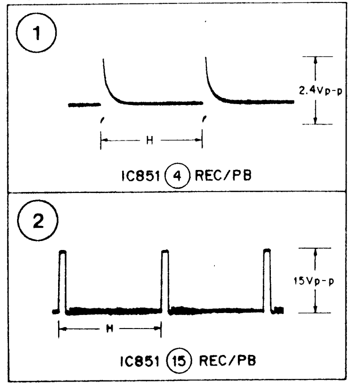
-REF. NO. : 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode(NTSC)
( ) : REC/PB mode(PAL)

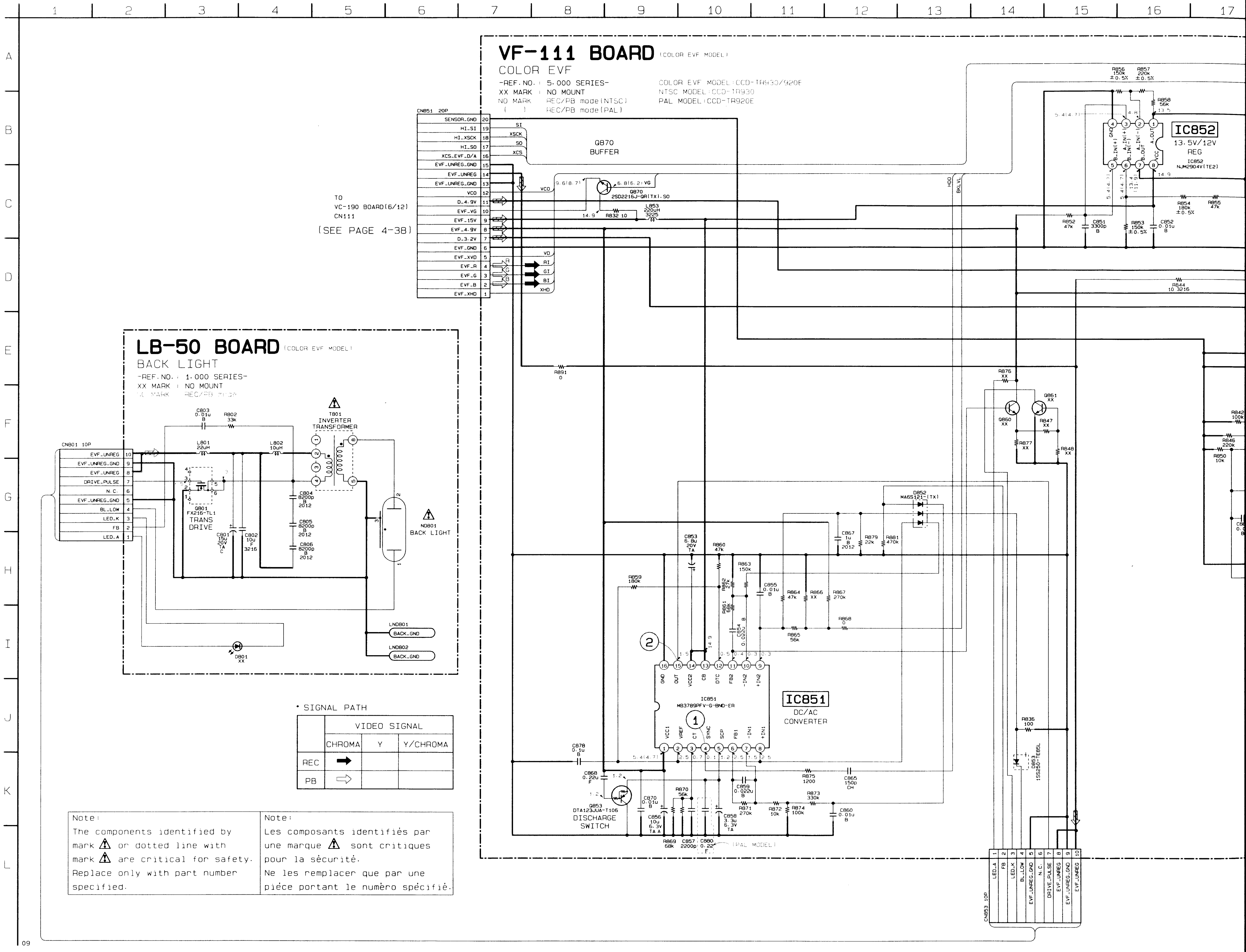
COLOR EVF MODEL:CCD-TR930/920E
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR920E



7
8
9
10
11
12
13
14
15
16
17
SENSOR_GND 20
HI_SI 19
HI_XSCK 18
HI_SO 17
CS_EVF_D/A 16
EVF_UNREG_GND 15
EVF_UNREG 14
EVF_UNREG_GND 13
VCO 12
D_4.9V 11
EVF_VG 10
EVF_15V 9
EVF_4.9V 8
D_3.2V 7
EVF_GND 6
EVF_XVD 5
EVF_R 4
EVF_G 3
EVF_B 2
EVF_XHD 1
SI
XSCK
SO
XCS
VCO
VD
RI
GI
BI
XHD
Q870
BUFFER
Q870
2SD2216J-QR(TX).SO
9.6(8.7)
6.8(6.2) VG
14.9
R832 10
L853
220uH
3225
R891
0
HDO
BKLVL
R856 150k ±0.5%
R857 220k ±0.5%
R858 56k
13.5
5.4(4.7)
4.8
GND
B_IN(+)
A_IN(+)
B_IN(-)
A_IN(-)
B_OUT
A_OUT
VCC
IC852
13.5V/12V
REG
IC852
NJM2904V(TE2)
14.9
13.4 (11.9)
R854 180k ±0.5%
R855 47k
R852 47k
C851 3300p B
R853 150k ±0.5%
C852 0.01u B
R844 10 3216
R876 XX
Q860 XX
Q861 XX
R847 XX
R877 XX
R848 XX
R842 100k
R846 220k
R850 10k
D852
MA6S121-(TX)
C867 1u B 2012
R879 22k
R881 470k
C853 6.8u 20V TA
R850 47k
R863 150k
R859 180k
R862 27k
R861 68k
C855 0.01u B
R864 47k
R866 XX
R867 270k
C854 0.022u B
R868 0
R865 56k
14.9
1.5
0.5
0.4
0.3
0.3
②
GND
OUT
VCC2
CB
DTC
FB2
-IN2
+IN2
IC851
MB3789PFV-G-BND-ER
IC851
DC/AC CONVERTER
①
VCC1
VREF
CT
SYNC
SCP
FB1
-IN1
+IN1
5.4(4.7)
2.5
0.7
0.1
1.2
2.5
1.5
2.5
C878 0.1u B
C868 0.22u F
1.2
Q853
DTA123JUA-T106
DISCHARGE SWITCH
C870 0.01u B
C856 10u 6.3V TA A
R870 56k
C858 3.3u 6.3V TA
R869 68k
C857 2200p
C880 0.22 F
(PAL MODEL)
C859 0.022u B
R871 270k
R872 10k
R874 100k
R875 1200
R873 330k
C865 150p CH
C860 0.01u B
R836 100
D853 1SS250-TE85L
CN853 10P
LED_A 1
FB 2
LED_K 3
BL_LOW 4
EVF_UNREG_GND 5
N.C. 6
DRIVE_PULSE 7
EVF_UNREG 8
EVF_UNREG_GND 9
EVF_UNREG 10

VF-111 BOARD




1
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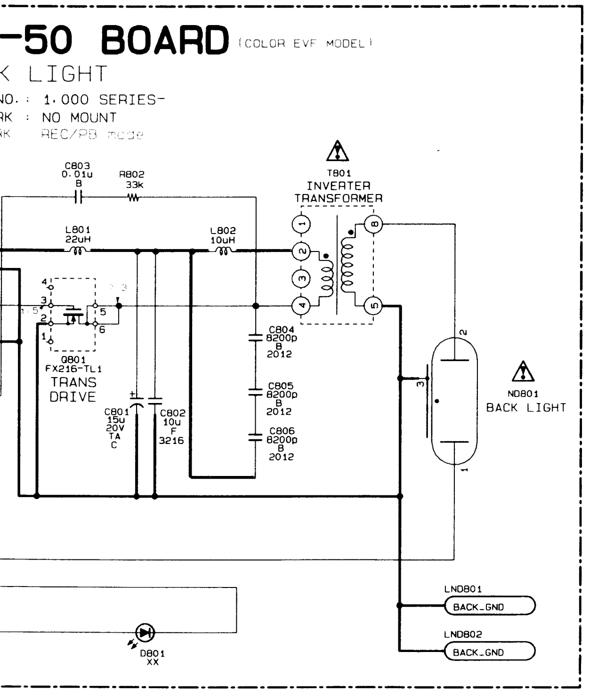
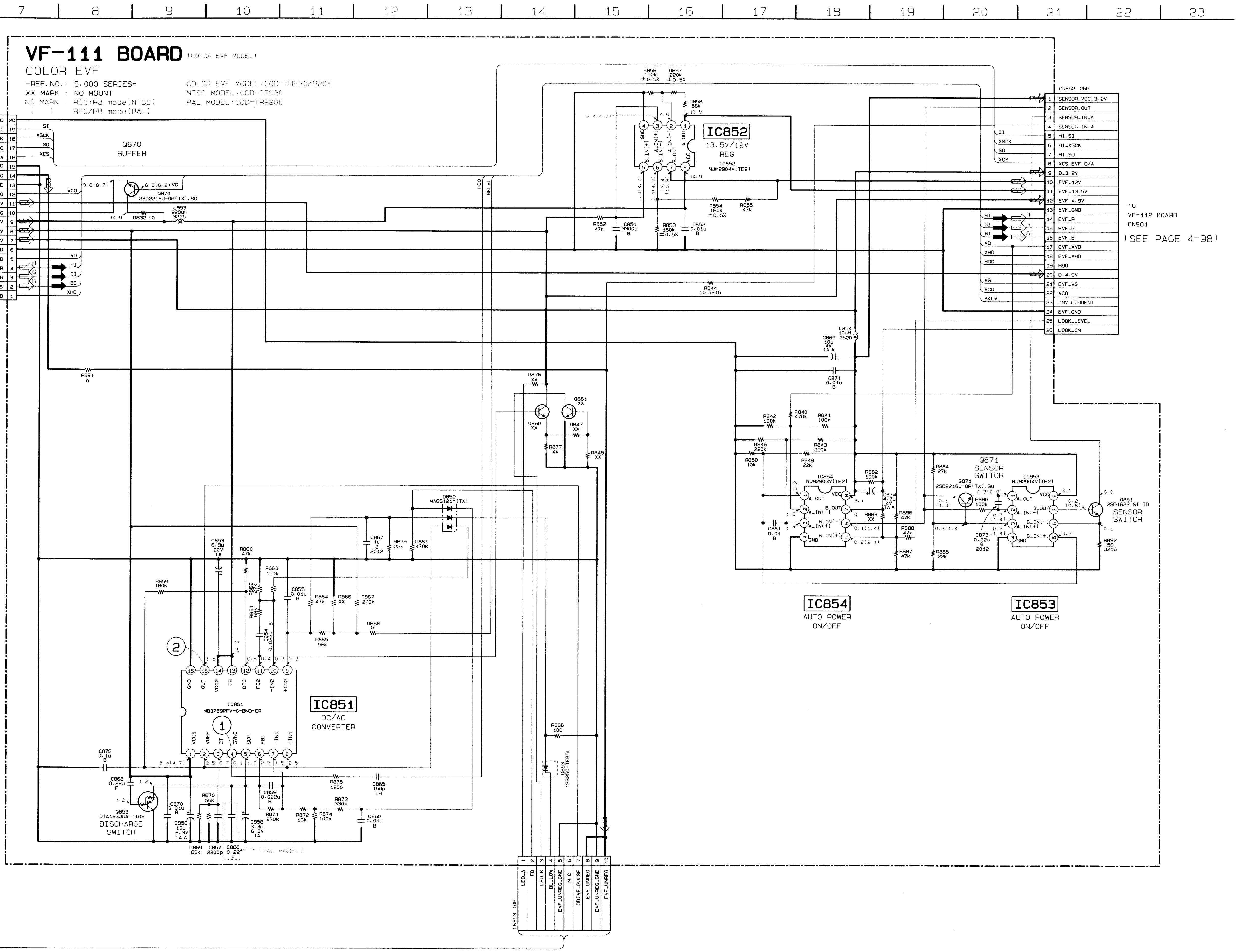
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
K
L
VF-111 BOARD (COLOR EVF MODEL)
COLOR EVF
-REF. NO. : 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK REC/PB mode(NTSC)
( ) REC/PB mode(PAL)
COLOR EVF MODEL:CCD-TR930/920E
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR920E
CN851 20P
SENSOR_GND 20
HI_SI 19
HI_XSCK 18
HI_SO 17
XCS_EVF_D/A 16
EVF_UNREG_GND 15
EVF_UNREG 14
EVF_UNREG_GND 13
VCO 12
D_4.9V 11
EVF_VG 10
EVF_15V 9
EVF_4.9V 8
D_3.2V 7
EVF_GND 6
EVF_XVD 5
EVF_R 4
EVF_G 3
EVF_B 2
EVF_XHD 1
SI
XSCK
SO
XCS
VD
RI
GI
BI
XHD
TO
VC-190 BOARD(6/12)
CN111
(SEE PAGE 4-38)
Q870
BUFFER
VCO
Q870
2SD2216J-QR(TX).SO
L853
220uH
3225
R832 10
R891
0
IC852
13.5V/12V
REG
IC852
NJM2904V(TE2)
R856 150k ±0.5%
R857 220k ±0.5%
R858 56k
R852 47k
C851 3300p B
R853 150k ±0.5%
C852 0.01u B
R854 180k ±0.5%
R855 47k
R844 10 3216
HDO
BKLVL
R876 XX
Q860 XX
Q861 XX
R847 XX
R877 XX
R848 XX
R842 100k
R846 220k
R850 10k
D852
MA6S121-(TX)
C867 1u B 2012
R879 22k
R881 470k
C853 6.8u 20V TA
R860 47k
R863 150k
R859 180k
C855 0.01u B
R864 47k
R866 XX
R867 270k
R868 0
R865 56k
IC851
MB3789PFV-G-BND-ER
IC851
DC/AC
CONVERTER
GND OUT VCC2 CB DTC FB2 -IN2 +IN2
VCC1 VREF CT SYNC SCP FB1 -IN1 +IN1
C878 0.1u B
C868 0.22u F
Q853
DTA123JUA-T105
DISCHARGE
SWITCH
C870 0.01u B
C856 10u 6.3V TA A
R870 56k
R871 270k
C858 3.3u 6.3V TA
R869 68k
C857 2200p
C880 0.22 F
(PAL MODEL)
R875 1200
C859 0.022u B
R873 330k
R872 10k
R874 100k
C865 150p CH
C860 0.01u B
R836 100
1SS355-TE85L
CN853 10P
LED_A 1
FB 2
LED_K 3
BL_LOW 4
EVF_UNREG_GND 5
N.C. 6
DRIVE_PULSE 7
EVF_UNREG_GND 8
EVF_UNREG_GND 9
EVF_UNREG 10
LB-50 BOARD (COLOR EVF MODEL)
BACK LIGHT
-REF. NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK REC/PB mode
C803 0.01u B
R802 33k
T801
INVERTER
TRANSFORMER
L801 22uH
L802 10uH
CN801 10P
EVF_UNREG 10
EVF_UNREG_GND 9
EVF_UNREG 8
DRIVE_PULSE 7
N.C. 6
EVF_UNREG_GND 5
BL_LOW 4
LED_K 3
FB 2
LED_A 1
Q801
FX216-TL1
TRANS
DRIVE
C801 15u 20V TA C
C802 10u F 3216
C804 8200p B 2012
C805 8200p B 2012
C806 8200p B 2012
ND801
BACK LIGHT
LND801
BACK_GND
LND802
BACK_GND
D801 XX
09

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


-50 BOARD (COLOR EVF MODEL)
K LIGHT
NO.: 1,000 SERIES-
RK : NO MOUNT
K : REC/PB mode
C803 0.01u B
R802 33k
T801 INVERTER TRANSFORMER
L801 22uH
L802 10uH
Q801 FX216-TL1 TRANS DRIVE
C801 15u 20V TA C
C802 10u F 3216
C804 8200p B 2012
C805 8200p B 2012
C806 8200p B 2012
ND801 BACK LIGHT
LND801 BACK_GND
LND802 BACK_GND
D801 XX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18
19
20
21
22
23
VF-111 BOARD (COLOR EVF MODEL)
COLOR EVF
-REF.NO.: 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode(NTSC)
( ) : REC/PB mode(PAL)
COLOR EVF MODEL:CCD-TR930/920E
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR920E
TO VC-190 BOARD(6/12) CN111
(SEE PAGE 4-38)
CN851 20P
20 SENSOR_GND
19 HI_SI
18 HI_XSCK
17 HI_SO
16 XCS_EVF_D/A
15 EVF_UNREG_GND
14 EVF_UNREG
13 EVF_UNREG_GND
12 VCO
11 D_4.9V
10 EVF_VG
9 EVF_15V
8 EVF_4.9V
7 D_3.2V
6 EVF_GND
5 EVF_XVD
4 EVF_R
3 EVF_G
2 EVF_B
1 EVF_XHD
Q870 BUFFER
Q870 2SD2216J-QR(TX).SO
L853 220uH 3225
R832 10
R891 0
IC852 13.5V/12V REG
IC852 NJM2904V(TE2)
R856 150k ±0.5%
R857 220k ±0.5%
R858 56k
R852 47k
C851 3300p B
R853 150k ±0.5%
C852 0.01u B
R854 180k ±0.5%
R855 47k
R844 10 3216
TO VF-112 BOARD CN901
(SEE PAGE 4-98)
CN852 26P
1 SENSOR_VCC_3.2V
2 SENSOR_OUT
3 SENSOR_IN_K
4 SENSOR_IN_A
5 HI_SI
6 HI_XSCK
7 HI_SO
8 XCS_EVF_D/A
9 D_3.2V
10 EVF_12V
11 EVF_13.5V
12 EVF_4.9V
13 EVF_GND
14 EVF_R
15 EVF_G
16 EVF_B
17 EVF_XVD
18 EVF_XHD
19 HDO
20 D_4.9V
21 EVF_VG
22 VCO
23 INV_CURRENT
24 EVF_GND
25 LOOK_LEVEL
26 LOOK_ON
L854 10uH 2520
C869 10u 4V TA A
C871 0.01u B
Q860 XX
Q861 XX
R876 XX
R877 XX
R847 XX
R848 XX
R842 100k
R840 470k
R841 100k
R846 220k
R843 220k
R850 10k
R849 22k
R882 100k
IC854 NJM2903V(TE2)
C874 4.7u 4V TA A
R889 XX
R886 47k
R888 47k
R887 47k
C881 0.01 B
Q871 SENSOR SWITCH
Q871 2SD2216J-QR(TX).SO
R884 27k
R880 100k
R885 22k
C873 0.22u B 2012
IC853 NJM2904V(TE2)
Q851 2SD1622-ST-TD SENSOR SWITCH
R892 56 3216
IC854 AUTO POWER ON/OFF
IC853 AUTO POWER ON/OFF
D852 MA6S121-(TX)
C867 1u B 2012
R879 22k
R881 470k
C853 6.8u 20V TA
R860 47k
R863 150k
R859 180k
R862 47k
R861 68k
C855 0.01u B
C854 0.022u B
R864 47k
R866 XX
R867 270k
R865 56k
R868 0
IC851 DC/AC CONVERTER
IC851 MB3789PFV-G-BND-ER
GND OUT VCC2 CB DTC FB2 -IN2 +IN2
VCC1 VREF CT SYNC SCP FB1 -IN1 +IN1
①
②
C878 0.1u B
C868 0.22u F
Q853 DTA123JUA-T106 DISCHARGE SWITCH
C870 0.01u B
C856 10u 6.3V TA A
R870 56k
R869 68k
C857 2200p
C880 0.22 F
C858 3.3u 6.3V TA
C859 0.022u B
R871 270k
R872 10k
R874 100k
R873 330k
R875 1200
C865 150p CH
C860 0.01u B
(PAL MODEL)
R836 100
D853 1SS250-TE85L
CN853 10P
1 LED_A
2 FB
3 LED_K
4 BL_LOW
5 EVF_UNREG_GND
6 N.C.
7 DRIVE_PULSE
8 EVF_UNREG
9 EVF_UNREG_GND
10 EVF_UNREG

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

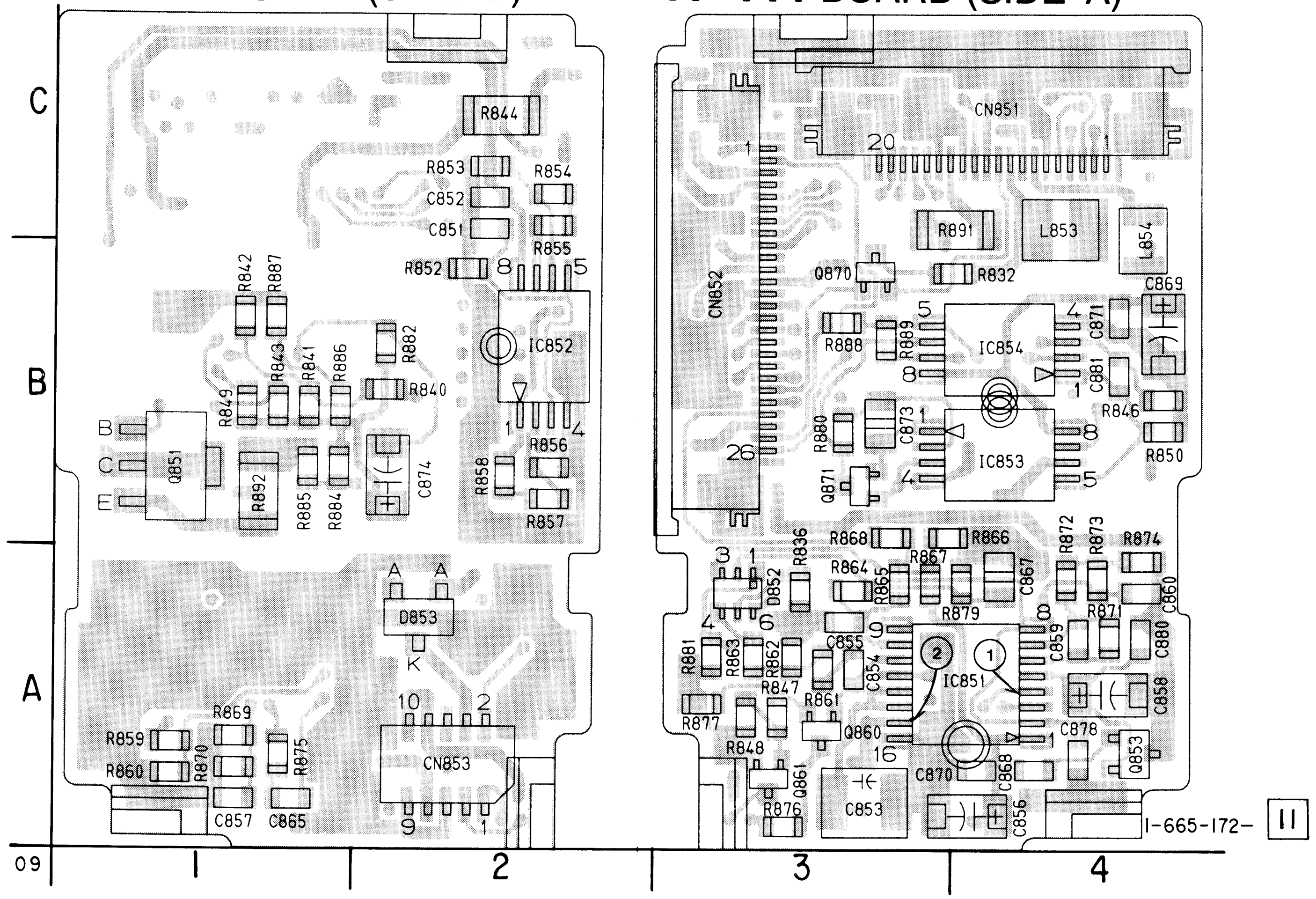
dentified by
d line with
ical for safety.
n part number

Note:
Les composants identifiés par
une marque ⚠ sont critiques
pour la sécurité.
Ne les remplacer que par une
pièce portant le numéro spécifié.

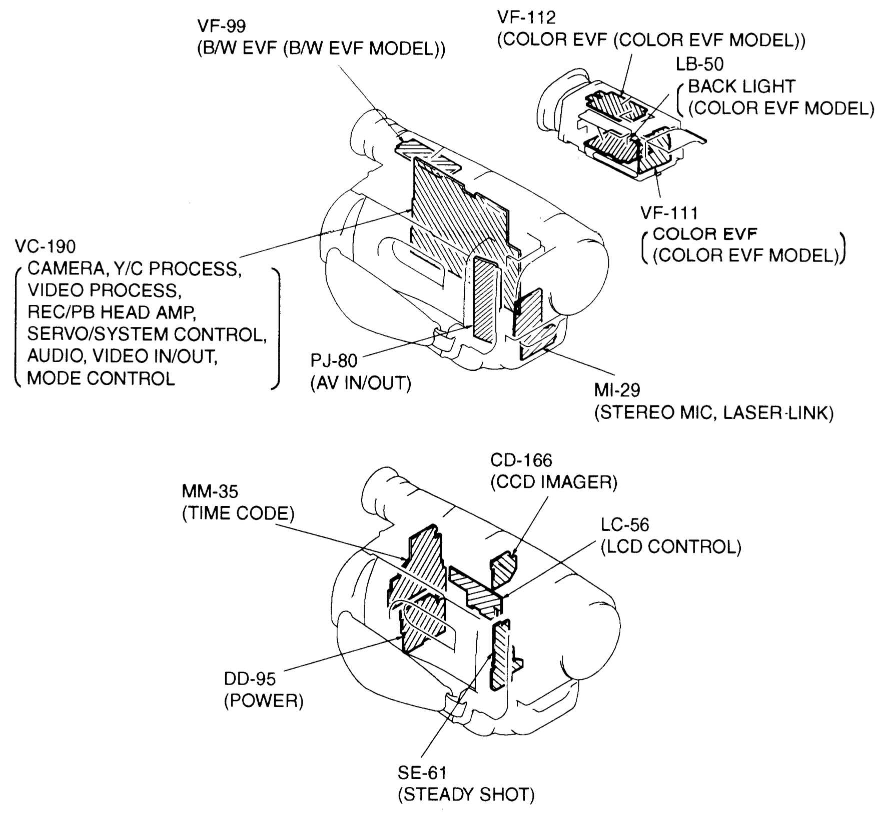
VF-111 (COLOR EVF (COLOR EVF MODEL)), LB-50 (BACK LIGHT) PRINTED WIRING BOARDS

– Ref No. VF-111 BOARD: 5,000 series, LB-50 BOARD: 1,000 series –

VF-111 BOARD (SIDE B) VF-111 BOARD (SIDE A)


C
B
A
09
1
2
3
4
R844
R853
R854
C852
C851
R855
R852
IC852
R842
R887
R843
R841
R886
R882
R840
R849
Q851
B
C
E
R892
R885
R884
C874
R858
R856
R857
D853
K
A
R869
R859
R860
R870
R875
C857
C865
CN853
10
2
9
1
CN851
20
CN852
R891
L853
L854
Q870
R832
C869
R888
R889
IC854
C871
C881
R846
R880
C873
IC853
R850
Q871
26
R836
D852
R868
R866
R867
R864
R865
R872
R873
R874
C867
R879
R871
C860
R881
R863
R862
R847
C855
C854
IC851
C859
C880
C858
R861
R877
R848
Q860
C878
Q853
C870
C868
Q861
R876
C853
C856
1-665-172-
11

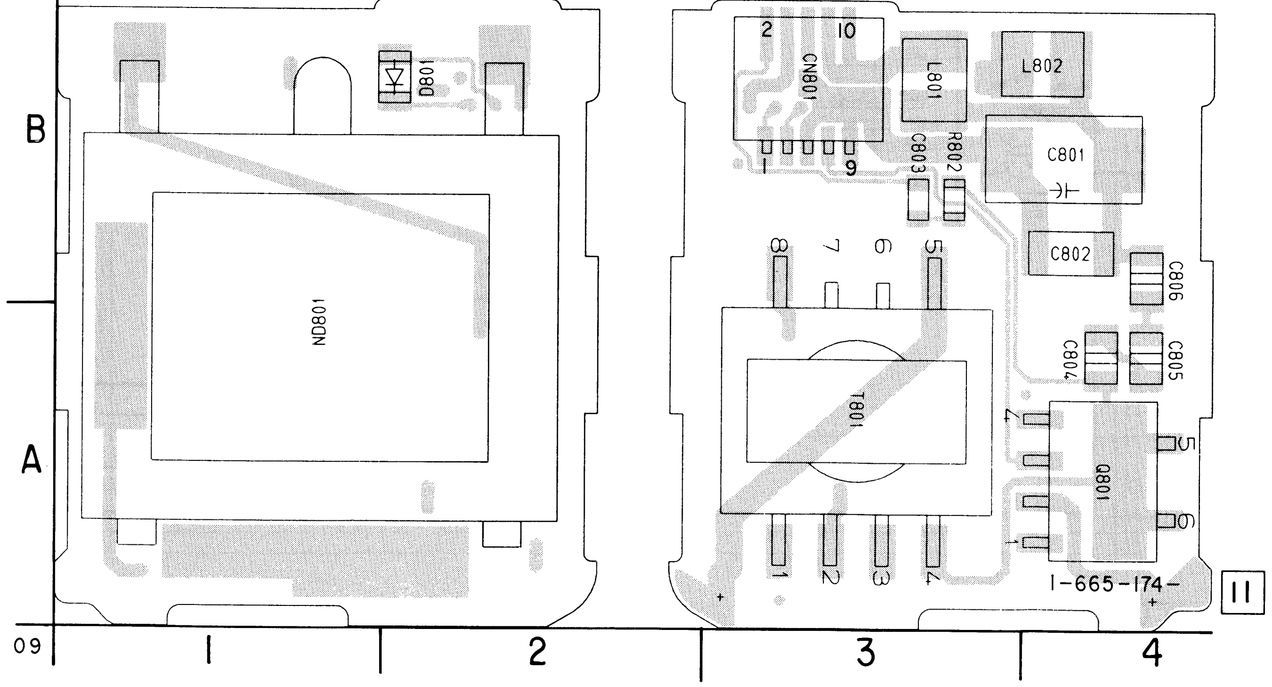
VF-111 BOARD	
C851	C-2
C852	C-2
C853	A-3
C854	A-3
C855	A-3
C856	A-4
C857	A-1
C858	A-4
C859	A-4
C860	A-4
C865	A-1
C867	A-4
C868	A-4
C869	B-4
C870	A-4
C871	B-4
C873	B-3
C874	B-2
C878	A-4
C880	A-4
C881	B-4
CN851	C-4
CN852	B-3
CN853	A-2
D852	A-3
D853	A-2
IC851	A-3
IC852	B-2
IC853	B-4
IC854	B-4
L853	C-4
L854	C-4
Q851	B-1
Q853	A-4
Q860	A-3
Q861	A-3
Q870	B-3
Q871	B-3
R832	B-3
R836	A-3
R840	B-2
R841	B-1
R842	B-1
R843	B-1
R844	C-2
R846	B-4
R847	A-3
R848	A-3
R849	B-1
R850	B-4
R852	B-2
R853	C-2
R854	C-2
R855	C-2
R856	B-2
R857	B-2
R858	B-2
R859	A-1
R860	A-1
R861	A-3
R862	A-3
R863	A-3
R864	A-3
R865	A-3
R866	B-3
R867	A-3
R868	B-3
R869	A-1
R870	A-1
R871	A-4
R872	A-4
R873	A-4
R874	A-4
R875	A-1
R876	A-3
R877	A-3
R879	A-4
R880	B-3
R881	A-3
R882	B-2
R884	B-1
R885	B-1
R886	B-1
R887	B-1
R888	B-3
R889	B-3
R891	C-3
R892	B-1


VF-99
(B/W EVF (B/W EVF MODEL))
VF-112
(COLOR EVF (COLOR EVF MODEL))
LB-50
BACK LIGHT
(COLOR EVF MODEL)
VF-111
COLOR EVF
(COLOR EVF MODEL)
VC-190
CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)
MM-35
(TIME CODE)
CD-166
(CCD IMAGER)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

LB-50 (BACK LIGHT) PRINTED WIRING BOARD

– Ref No. LB-50 BOARD: 1,000 series –

LB-50 BOARD (SIDE B) LB-50 BOARD (SIDE A)

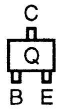

B
A
09
1
2
3
4
D801
ND801
2
10
CN801
1
9
L801
L802
C803
R802
C801
C802
C806
C804
C805
8
7
6
5
T801
Q801
1-665-174-
11

LB-50 BOARD	
C801	B-4
C802	B-4
C803	B-3
C804	A-4
C805	A-4
C806	B-4
CN801	B-3
D801	B-2
L801	B-3
L802	B-4
ND801	A-1
Q801	A-4
R802	B-3
T801	A-3

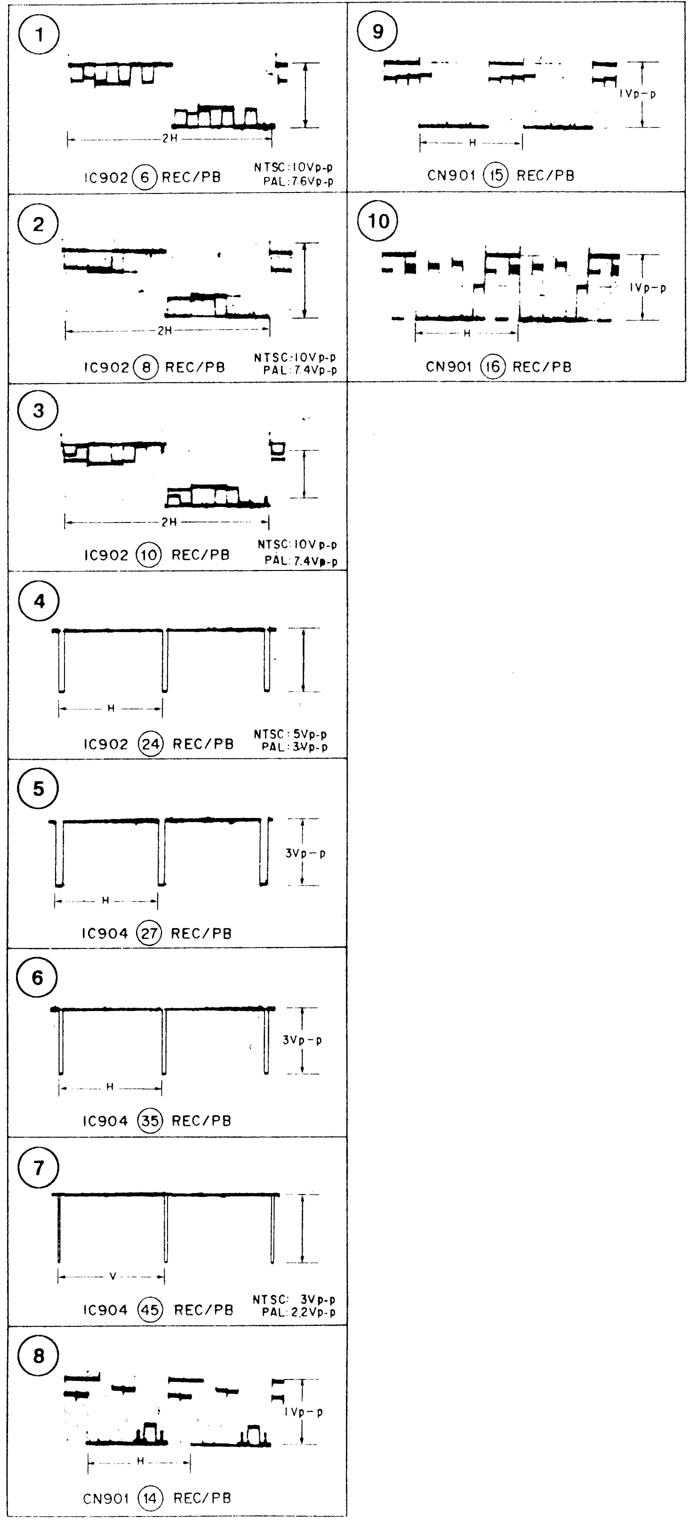
- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



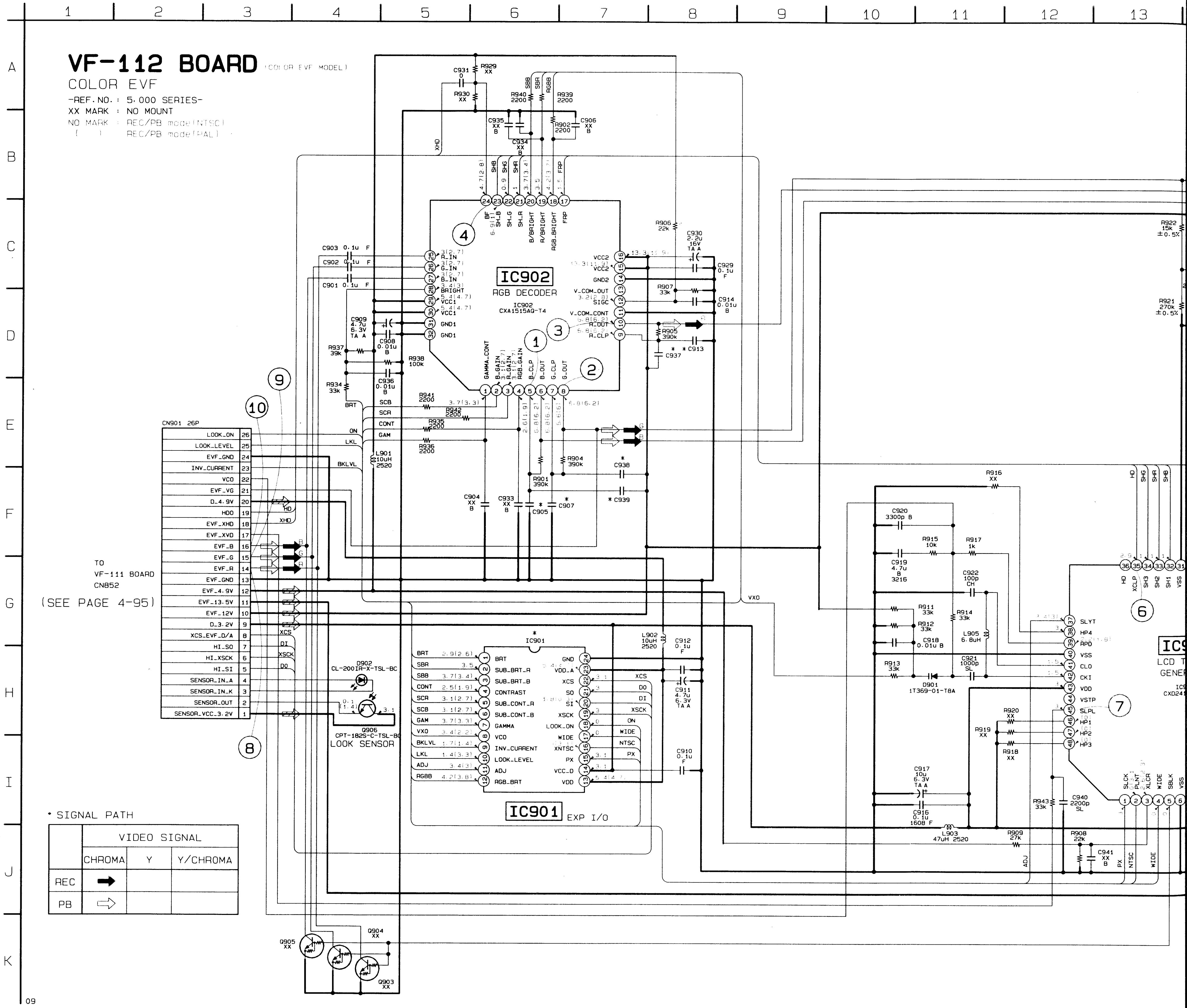
VF-112 BOARD



VF-112 BOARD (COLOR EVF MODEL)

COLOR EVF

-REF.NO.: 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode(NTSC)
( ) : REC/PB mode(PAL)


1
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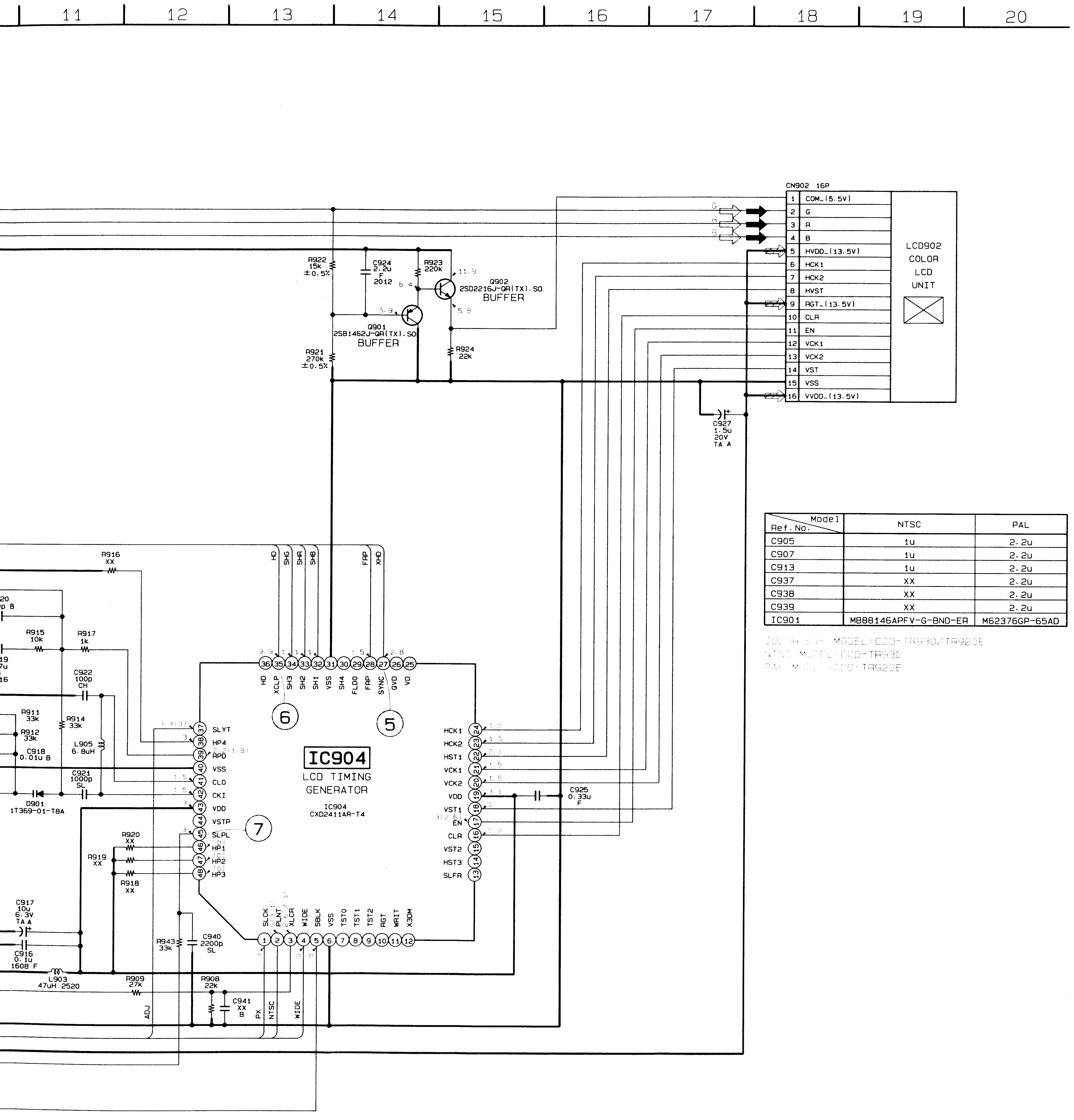
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
K
IC902
RGB DECODER
IC902
CXA1515AQ-T4
R_IN
G_IN
B_IN
BRIGHT
VCC1
GND1
VCC2
GND2
V_COM_OUT
SIGC
V_COM_CONT
R_OUT
R_CLP
GAMMA_CONT
B_GAIN
R_GAIN
RGB_GAIN
B_CLP
B_OUT
G_CLP
G_OUT
BF
SH_B
SH_G
SH_R
B/BRIGHT
R/BRIGHT
RGB_BRIGHT
FRP
XHD
SHB
SHG
SHR
C931
C935
C934
C906
C903 0.1u F
C902 0.1u F
C901 0.1u F
C909 4.7u 6.3V TA A
C908 0.01u B
C936 0.01u B
C929 0.1u F
C930 2.2u 16V TA A
C914 0.01u B
C937
C913
C938
C939
C904 XX B
C933 XX B
C905
C907
R929 XX
R930 XX
R940 2200
R939 2200
R902 2200
R906 22k
R907 33k
R905 390k
R937 39k
R938 100k
R934 33k
R941 2200
R942 2200
R935 2200
R936 2200
R904 390k
R901 390k
L901 10uH 2520
CN901 26P
LOOK_ON 26
LOOK_LEVEL 25
EVF_GND 24
INV_CURRENT 23
VCO 22
EVF_VG 21
D_4.9V 20
HDO 19
EVF_XHD 18
EVF_XVD 17
EVF_B 16
EVF_G 15
EVF_R 14
EVF_GND 13
EVF_4.9V 12
EVF_13.5V 11
EVF_12V 10
D_3.2V 9
XCS_EVF_D/A 8
HI_SO 7
HI_XSCK 6
HI_SI 5
SENSOR_IN_A 4
SENSOR_IN_K 3
SENSOR_OUT 2
SENSOR_VCC_3.2V 1
TO VF-111 BOARD CN852
(SEE PAGE 4-95)
BRT
SCB
SCR
CONT
GAM
ON
LKL
BKLVL
HD
XHD
XCS
DI
XSCK
DO
D902 CL-200IR-X-TSL-BC
Q906 CPT-182S-C-TSL-BC
LOOK SENSOR
IC901
EXP I/O
BRT
SUB_BRT_R
SUB_BRT_B
CONTRAST
SUB_CONT_R
SUB_CONT_B
GAMMA
VCO
INV_CURRENT
LOOK_LEVEL
ADJ
RGB_BRT
GND
VDD_A
XCS
SO
SI
XSCK
LOOK_ON
WIDE
XNTSC
PX
VCC_D
VDD
SBR
SBB
SCR
VXO
BKLVL
LKL
ADJ
RGBB
NTSC
PX
L902 10uH 2520
C912 0.1u F
C911 4.7u 6.3V TA A
C910 0.1u F
Q905 XX
Q904 XX
Q903 XX
VXO
R922 15k ±0.5%
R921 270k ±0.5%
R916 XX
C920 3300p B
R915 10k
R917 1k
C919 4.7u B 3216
C922 100p CH
R911 33k
R912 33k
R914 33k
C918 0.01u B
L905 6.8uH
C921 1000p SL
R913 33k
D901 1T369-01-T8A
R920 XX
R919 XX
R918 XX
C917 10u 6.3V TA A
C916 0.1u 1608 F
L903 47uH 2520
R909 27k
R943 33k
C940 2200p SL
R908 22k
C941 XX B
ADJ
NTSC
WIDE
HD
XCLP
SH3
SH2
SH1
VSS
SLYT
HP4
RPD
VSS
CLO
CKI
VDD
VSTP
SLPL
HP1
HP2
HP3
SLCK
PLNT
XLCR
WIDE
SBLK
VSS
SHG
SHR
SHB
LCD T
GENER
CXD24
09

* SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

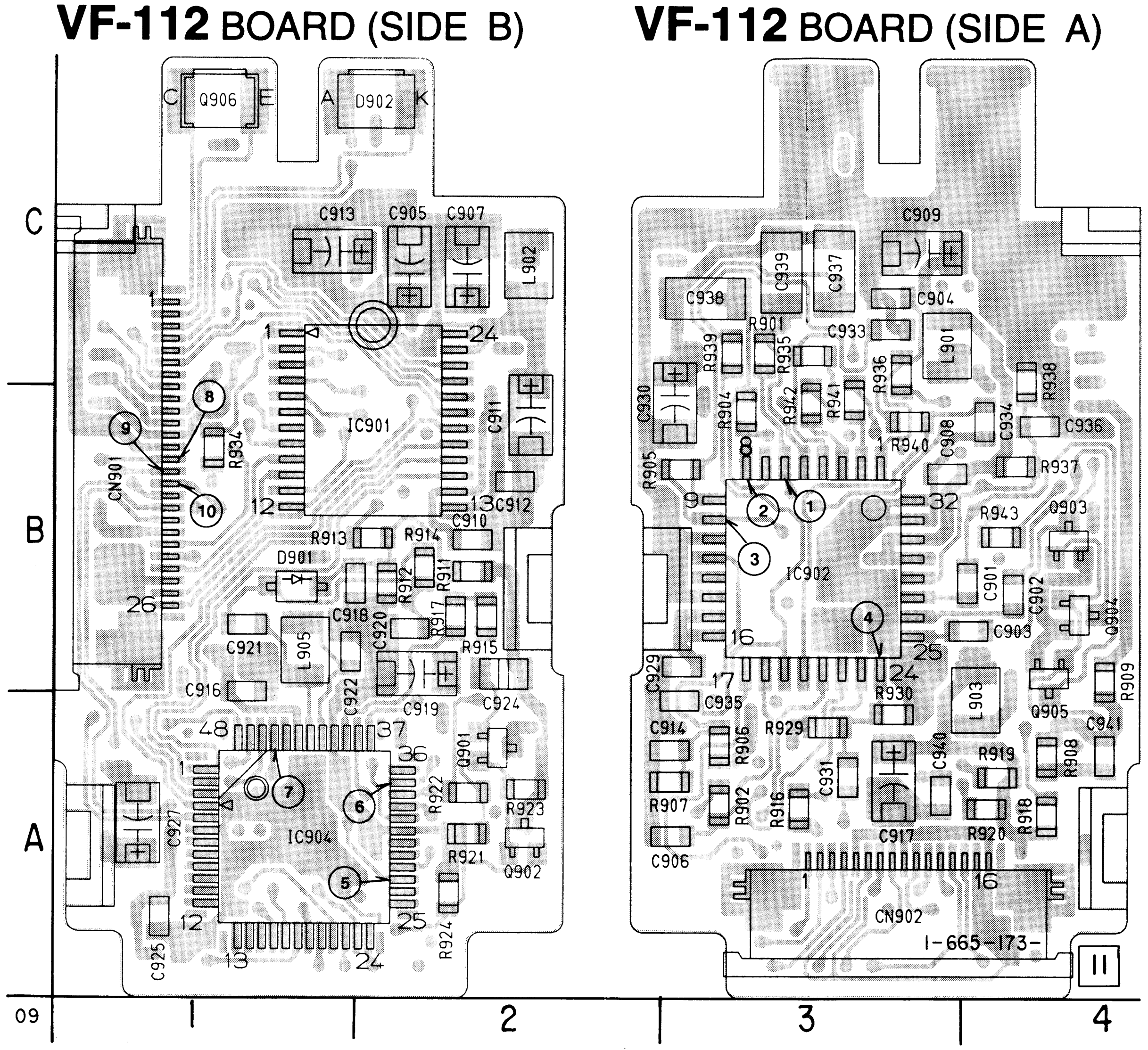

11
12
13
14
15
16
17
18
19
20
CN902 16P
1 COM_(5.5V)
2 G
3 R
4 B
5 HVDD_(13.5V)
6 HCK1
7 HCK2
8 HVST
9 RGT_(13.5V)
10 CLR
11 EN
12 VCK1
13 VCK2
14 VST
15 VSS
16 VVDD_(13.5V)
LCD902
COLOR
LCD
UNIT
R922 15k ±0.5%
C924 2.2u F 2012
R923 220k
Q902 2SD2216J-QR(TX).SO
BUFFER
Q901 2SB1462J-QR(TX).SO
BUFFER
R921 270k ±0.5%
R924 22k
C927 1.5u 20V TA A
R916 XX
R915 10k
R917 1k
C922 100p CH
R911 33k
R912 33k
R914 33k
C918 0.01u B
L905 6.8uH
C921 1000p SL
D901 1T369-01-T8A
R920 XX
R919 XX
R918 XX
C917 10u 6.3V TA A
C916 0.1u 1608 F
L903 47uH 2520
R909 27k
R943 33k
C940 2200p SL
R908 22k
C941 XX B
ADJ
PX
NTSC
WIDE
HD
SHG
SHR
SHB
FRP
XHD
HD
XCLP
SH3
SH2
SH1
VSS
SH4
FLD0
FRP
SYNC
QVD
VD
SLYT
HP4
RPD
VSS
CLO
CKI
VDD
VSTP
SLPL
HP1
HP2
HP3
HCK1
HCK2
HST1
VCK1
VCK2
VDD
VST1
EN
CLR
VST2
HST3
SLFR
SLCK
PLNT
XLCR
WIDE
SBLK
VSS
TST0
TST1
TST2
RGT
WRIT
X3DM
IC904
LCD TIMING
GENERATOR
IC904
CXD2411AR-T4
C925 0.33u F
⑤
⑥
⑦

Model Ref. No.	NTSC	PAL
C905	1u	2.2u
C907	1u	2.2u
C913	1u	2.2u
C937	XX	2.2u
C938	XX	2.2u
C939	XX	2.2u
IC901	MB88146APFV-G-BND-ER	M62376GP-65AD

COLOR EVF MODEL: CCD-TR930/TR920E
NTSC MODEL: CCD-TR930
PAL MODEL: CCD-TR920E

VF-112 (COLOR EVF (COLOR EVF MODEL) PRINTED WIRING BOARD

– Ref No. VF-112 BOARD: 5,000 series –


VF-112 BOARD (SIDE B)

VF-112 BOARD (SIDE A)

C
B
A
09
1
2
3
4
Q906
D902
C913
C905
C907
L902
IC901
C911
CN901
C912
C910
R913
R914
D901
C918
C921
L905
C922
C919
C924
C916
IC904
C927
C925
Q901
R922
R923
R921
Q902
R924
C909
C938
C939
C937
C904
R901
C933
L901
R938
C930
R904
R942
R941
R936
R940
C908
C934
C936
R905
R937
IC902
R943
Q903
C901
C902
C903
Q904
C929
C935
R930
L903
Q905
R909
C941
C914
R906
R929
C931
R919
R908
R907
R902
R916
C917
R920
R918
C906
CN902
1-665-173-
11

VF-112

C901
C902
C903
C904
C905
C906
C907
C908
C909
C910
C911
C912
C913
C914
C916
C917
C918
C919
C920
C921
C922
C924
C925
C927
C929
C930
C931
C933
C934
C935
C936
C937
C938
C939
C940
C941

CN901
CN902

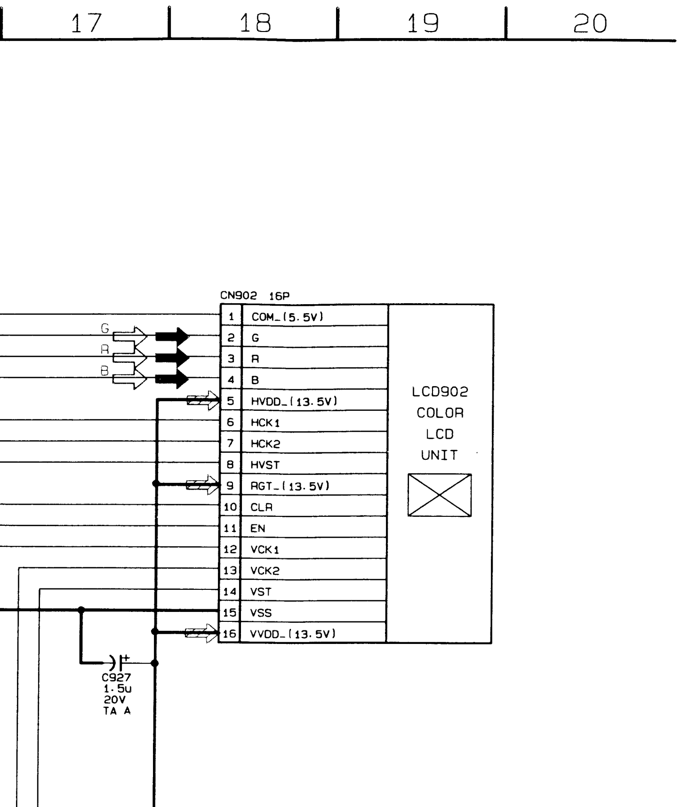
D901
D902

IC901
IC902
IC904

L901
L902
L903
L905

Q901
Q902
Q903
Q904
Q906

R901
R902
R904
R905
R906
R907
R908
R911
R912
R913
R914
R915
R916
R917
R918
R919
R920
R921
R922
R923
R924
R929
R930
R934
R935
R936
R937
R938
R939
R940
R941
R942
R943


17
18
19
20
CN902 16P
1 COM_(5.5V)
2 G
3 R
4 B
5 HVDD_(13.5V)
6 HCK1
7 HCK2
8 HVST
9 RGT_(13.5V)
10 CLR
11 EN
12 VCK1
13 VCK2
14 VST
15 VSS
16 VVDD_(13.5V)
G
R
B
LCD902
COLOR
LCD
UNIT
C927
1.5u
20V
TA A

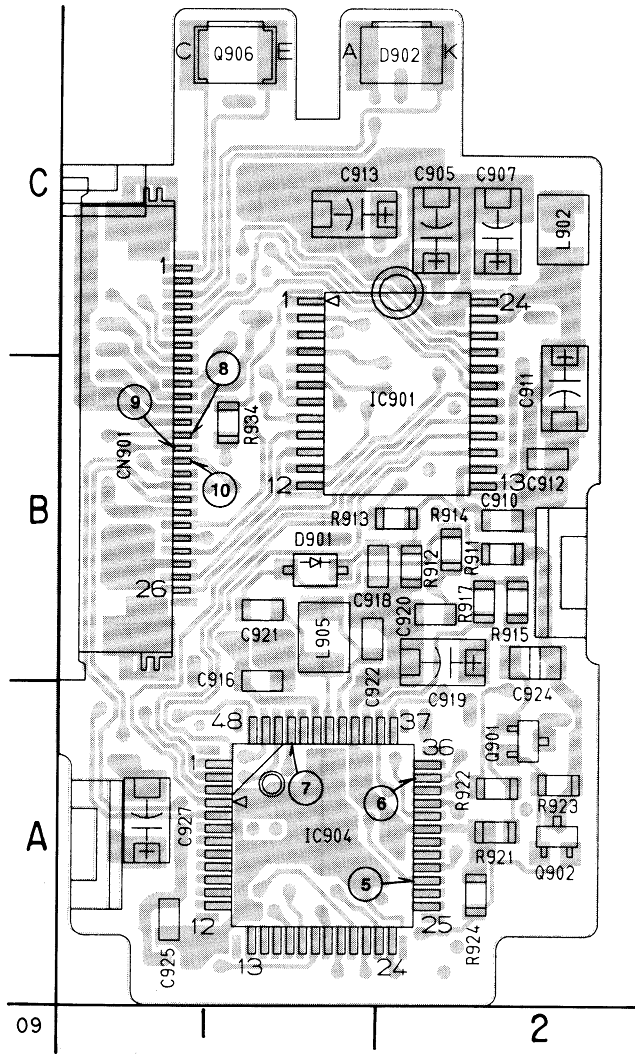
Model Ref. No.	NTSC	PAL
C905	1u	2.2u
C907	1u	2.2u
C913	1u	2.2u
C937	XX	2.2u
C938	XX	2.2u
C939	XX	2.2u
IC901	MB88146APFV-G-BND-ER	M62376GP-65AD

COLOR EVF MODEL : CCD-TR930/TR920E
NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR920E

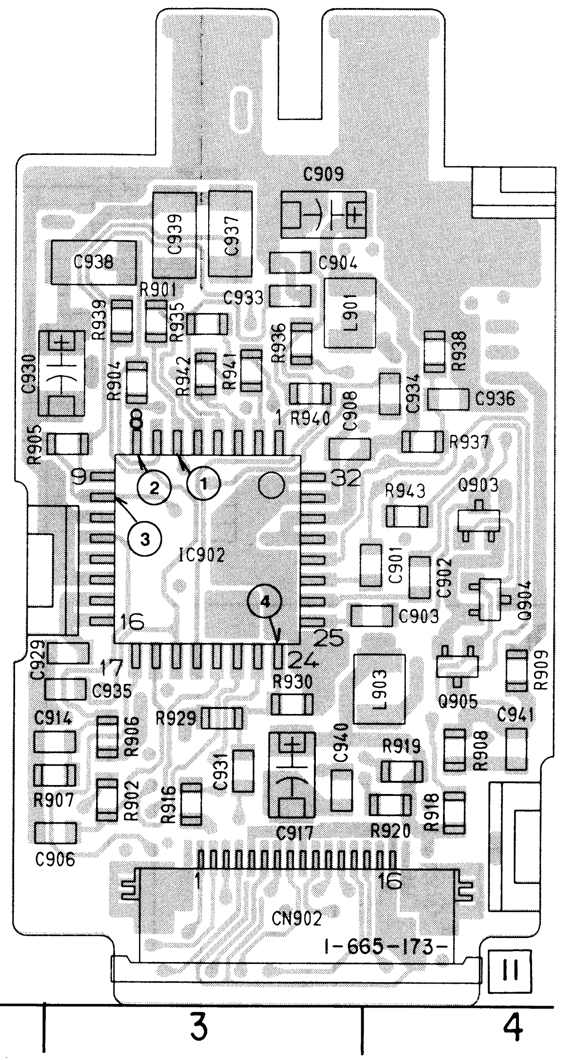
VF-112 (COLOR EVF (COLOR EVF MODEL) PRINTED WIRING BOARD

– Ref No. VF-112 BOARD: 5,000 series –

VF-112 BOARD (SIDE B)

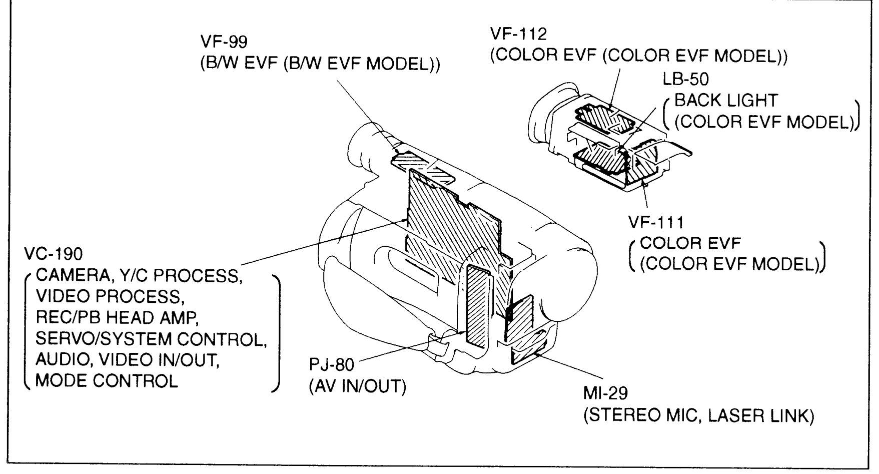

C
B
A
09
1
2
Q906
C
E
A
D902
K
C913
C905
C907
L902
IC901
1
24
12
13
C911
C912
C910
CN901
R934
26
R913
R914
D901
R912
R911
R917
R915
C918
C920
C921
L905
C922
C916
C919
C924
48
37
36
IC904
C927
Q901
R922
R923
R921
Q902
C925
R924
12
13
24
25

VF-112 BOARD (SIDE A)


3
4
C909
C938
C939
C937
C904
R901
C933
R939
R935
L901
R936
R938
C930
R904
R942
R941
R940
C908
C934
C936
R937
R905
9
32
R943
Q903
IC902
C901
C902
C903
Q904
16
17
25
24
C929
C935
R930
L903
Q905
R909
C914
R929
R906
R908
C941
R919
C940
R907
R902
R916
C931
C917
R920
R918
C906
1
16
CN902
1-665-173-
11

VF-112 BOARD

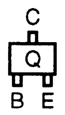
C901	B-4
C902	B-4
C903	B-4
C904	C-3
C905	C-2
C906	A-3
C907	C-2
C908	B-3
C909	C-3
C910	B-2
C911	B-2
C912	B-2
C913	C-1
C914	A-3
C916	B-1
C917	A-3
C918	B-1
C919	B-2
C920	B-2
C921	B-1
C922	B-1
C924	B-2
C925	A-1
C927	A-1
C929	B-3
C930	B-3
C931	A-3
C933	C-3
C934	B-4
C935	A-3
C936	B-4
C937	C-3
C938	C-3
C939	C-3
C940	A-3
C941	A-4
CN901	B-1
CN902	A-3
D901	B-1
D902	C-2
IC901	B-1
IC902	B-3
IC904	A-1
L901	C-3
L902	C-2
L903	A-4
L905	B-1
Q901	A-2
Q902	A-2
Q903	B-4
Q904	B-4
Q906	C-1
R901	C-3
R902	A-3
R904	B-3
R905	B-3
R906	A-3
R907	A-3
R908	A-4
R911	B-2
R912	B-2
R913	B-2
R914	B-2
R915	B-2
R916	A-3
R917	B-2
R918	A-4
R919	A-4
R920	A-4
R921	A-2
R922	A-2
R923	A-2
R924	A-2
R929	A-3
R930	A-3
R934	B-1
R935	C-3
R936	C-3
R937	B-4
R938	B-4
R939	C-3
R940	B-3
R941	B-3
R942	B-3
R943	B-4


VF-99
(B/W EVF (B/W EVF MODEL))
VF-112
(COLOR EVF (COLOR EVF MODEL))
LB-50
BACK LIGHT
(COLOR EVF MODEL)
VF-111
COLOR EVF
(COLOR EVF MODEL)
VC-190
CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



SECTION 5
ADJUSTMENTS

Refer to page 2 as Table for distinction functions of models and classification

5-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Color monitor
- Regulated power supply
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)Note 1	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	CPC-7 jig	J-6082-382-A	For the color viewfinder adjustment For adjusting the video section
J-8	Power code	J-6082-223-A	For connecting the battery terminal and DC power supply
J-9	AFM DEV jig	J-6082-312-A	For adjusting the deviation
J-10	Clear chart	J-6080-621-A	
J-11	Extension cable (16P, 0.5 mm)	J-6082-357-A	For extension between the CD-166 board (CN401) and VC-190 board (CN112)
J-12	IR receiver jig	J-6082-383-A	For adjusting the IR transmitter

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

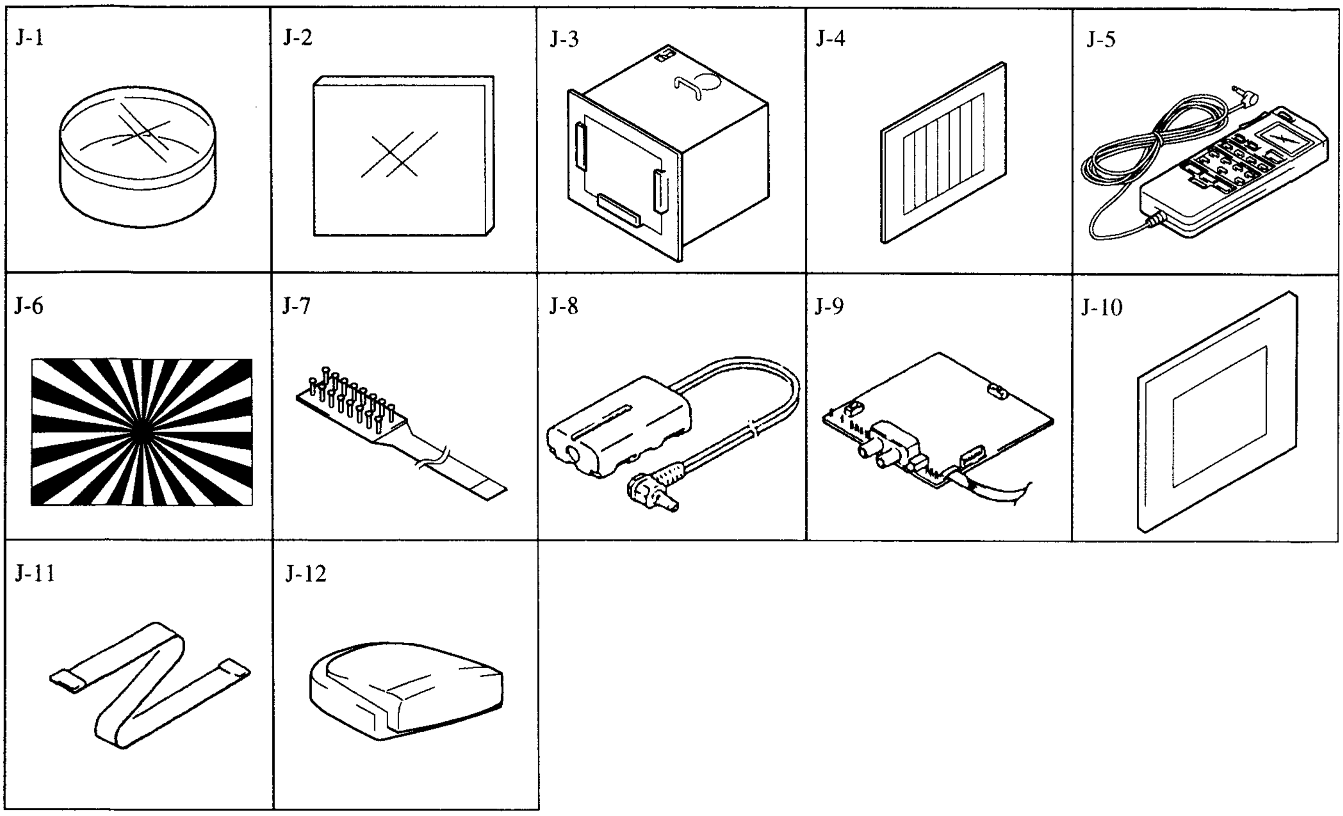

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12

Fig. 5-1-1.

1-1-2. Preparations

Note 1: Refer to "Section 2 DISASSEMBLY" for details of how to remove the cabinet and boards.

Note 2: If performing only adjustments, the lens block and VC-190 board need not be adjusted.

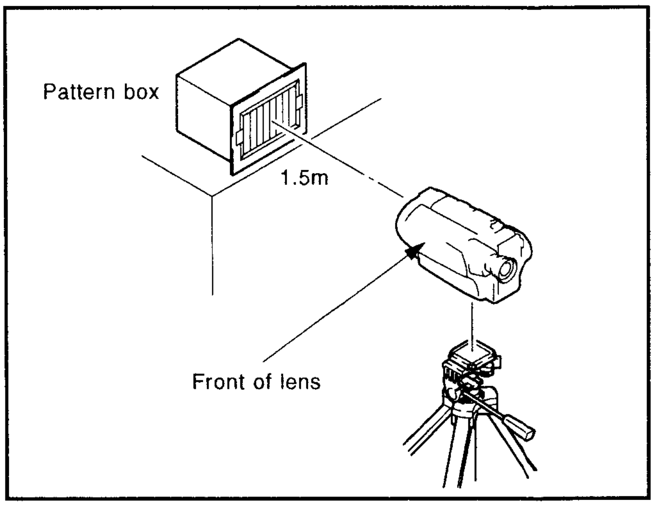


Fig. 5-1-2.

1) Connect the adjusting equipment according to Fig. 5-1-3.
2) The front panel block (MI-29 board) need not be connected.
   To remove, disconnect the following connector.
   1. CN303 (26P, 0.5 mm) of MI-29 board
3) The accessory shoe need not be connected.
   To remove, disconnect the following connector.
   1. CN205 of VC-190 board (10P, 0.5 mm) (CCD-TR930/TR825E/TR930E)
4. The viewfinders (VF-111, 112 boards (COLOR EVF model), VF-99 board (B/W EVF model) need not be connected. To remove, disconnect the following connector.
   1. CN111 of VC-190 board (20P, 0.5 mm)
5) By setting the "forced power supply ON mode", the camera power supply can be turned ON even if the cabinet (R) (power switch, Control switch block) has been removed. When removing the cabinet (R), disconnect the following connector. However, as removing CN1953 means removing the lithium 3V power supply, data such as date, time, user-set menus will be lost. After adjustments, reset these data. If CN1953 has been removed, the self-diagnosis data, data on history of use (total drum rotation time, date of when the user first turned the power ON, and the date of when condensation occurred the last time) will be lost. Before removing, note down the self-diagnosis data and data of page:3, address:E0 to E9. (Refer to the "Service Mode" of "VIDEO SECTION ADJUSTMENT" for the data on the history of use.)
   1. CN1953 of VC-190 board (28P, 0.5 mm)

After the adjustments, be sure to exit the "forced camera power supply ON mode".

Note 3: Setting the "forced camera power supply ON mode"
1) Set data: 01 to page: 0, address: 01.
2) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.

The camera power supply can be turned ON even if the cabinet (R) has been removed using the above steps. After completing adjustments, be sure to exit the "forced Camera power supply ON mode".

Note 4: Exiting the "forced camera power supply ON mode"
1) Set data: 01 to page: 0, address: 01.
2) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 0, address: 01.

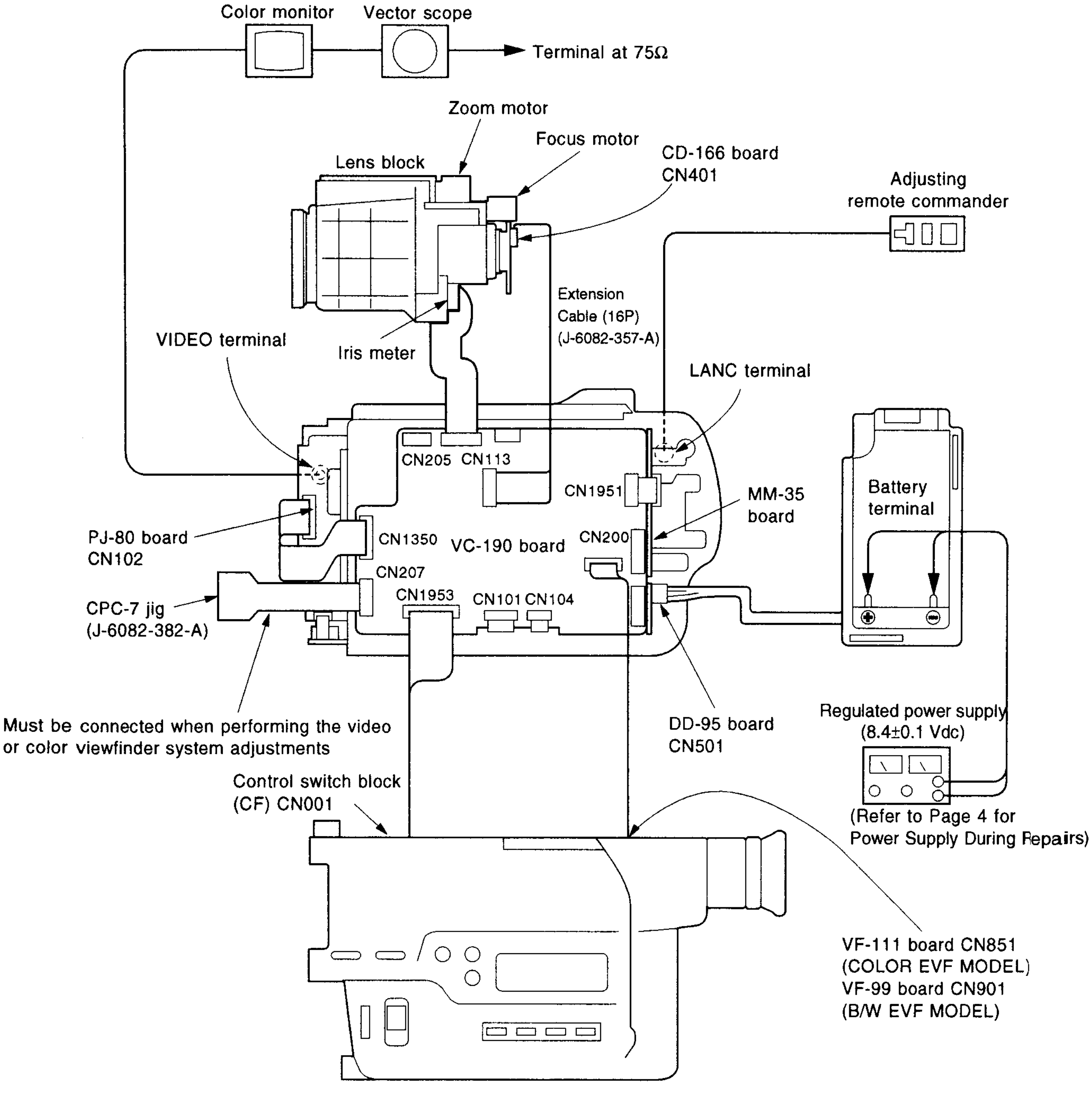

Color monitor
Vector scope
Terminal at 75Ω
Zoom motor
Focus motor
Lens block
CD-166 board
CN401
Adjusting
remote commander
Extension
Cable (16P)
(J-6082-357-A)
VIDEO terminal
Iris meter
LANC terminal
CN205
CN113
CN1951
MM-35
board
Battery
terminal
PJ-80 board
CN102
CN1350
VC-190 board
CN200
CN207
CPC-7 jig
(J-6082-382-A)
CN1953
CN101
CN104
Must be connected when performing the video
or color viewfinder system adjustments
DD-95 board
CN501
Regulated power supply
(8.4±0.1 Vdc)
Control switch block
(CF) CN001
(Refer to Page 4 for
Power Supply During Repairs)
VF-111 board CN851
(COLOR EVF MODEL)
VF-99 board CN901
(B/W EVF MODEL)

Fig. 5-1-3.

1-1-3. Precautions

1. Switch settings

Set the switches to the following positions, and adjust with out loading the cassette tape, unless specified otherwise.

1. CAMERA/VTR (or PLAYER) switch
   (Control switch block (PS-6500)) .... CAMERA
2. DEMO MODE switch (Menu display) .... OFF
3. DIGITAL ZOOM switch (Menu display) .... OFF
4. STEADY SHOT switch (Control switch block (CF))
   .... OFF
5. FOCUS switch (Control switch block (CF)) .... MANUAL
6. PROGRAM AE button (Control switch block (CF)) ..... OFF
7. BACK LIGHT button (Control switch block (CF)) ... OFF
8. 16 : 9 WIDE button (Control switch block (CF)) ...... OFF
9. PICTURE EFECT button (Control switch block (CF))
   .... OFF

2. Adjusting Procedure

Adjust in the given order.

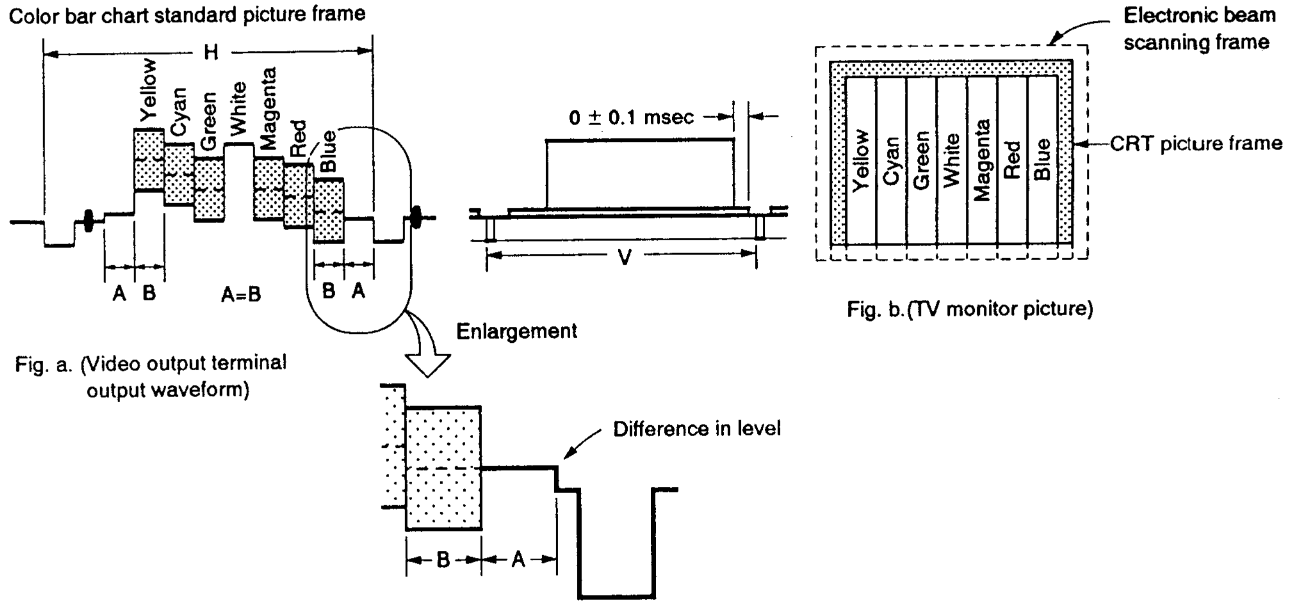

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
Enlargement
0 ± 0.1 msec
V
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a. (Video output terminal output waveform)

Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 5-1-4.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 5-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and insert a clear chart in its place. (Do not perform zoom operations during this time.)
3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm x 841 mm) paper to a black one, and make the chart shown in Fig. 5-1-5.

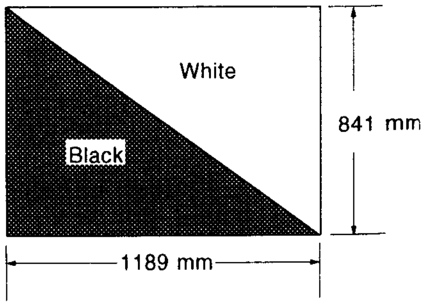

White
Black
841 mm
1189 mm

Fig. 5-1-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the LANC terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-1-6.

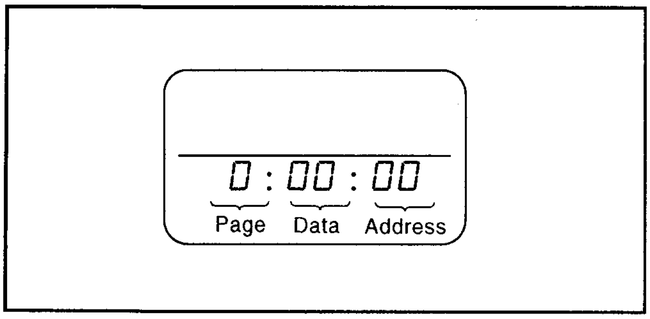


Fig. 5-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 5-1-1.

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▷) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (D, E, F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 0, address: 01, and set the data to 01, and enables Page D and E, F to be adjusted.
5) After completing all adjustments, set data: 00 to page: 0, address: 01 and turn off the main power supply (8.4V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Page D Address

Note 1: The ← mark shown in the adjustment data memo column indicates that the address data is fixed and same as the initial value.

Note 2: The initial adjustment data value is the value after "Page D, Page E, Page F Data Initialization" and "Page D Data Modification" have been executed. It is different from the value after all adjustments have been executed.

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
00 to 0F					
10	00	00	00	00	←
11	02	06	06	07	←
12	7E	FC	FC	FE	←
13	06	01	01	06	←
14	17	07	17	17	←
15	01	01	F1	01	←
16	00	00	00	00	←
17	0C	0C	0C	0C	←
18	8C	8C	80	0C	←
19	16	16	16	16	←
1A	37	37	37	37	←
1B	15	15	15	15	←
1C	28	28	28	28	←
1D	85	81	81	81	←
1E	00	00	00	00	←
1F	48	48	48	48	←
20	00	00	00	01	←
21	30	30	30	80	←
22	09	08	08	09	←
23	30	20	25	20	←
24	12	12	12	12	←
25	64	50	50	50	←
26	04	04	04	04	←
27	F9	F9	F9	F9	←
28	88	88	88	88	
29	8D	8D	8D	8D	
2A	A8	A8	A8	A8	
2B	BD	BD	BD	BD	
2C	C8	C8	C8	C8	
2D	05	05	05	05	←
2E	00	00	00	00	←
2F	01	01	01	01	←
30	05	05	05	05	←
31	41	41	41	41	←
32	30	30	30	30	←
33	CC	CC	CC	CC	←
34	07	07	07	07	←
35	88	88	88	88	
36	C9	C9	C9	C9	←
37	02	02	02	02	←
38	02	02	02	02	←
39	04	04	04	04	←
3A	0A	0A	0A	0A	←

Table 5-1-2 (1).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
3B	32	32	32	32	←
3C	00	00	00	00	←
3D	80	80	80	80	←
3E	04	03	03	03	←
3F	02			04	←
40	3F			3F	←
41	00			00	←
42	24			24	←
43	24			24	←
44	82			82	←
45	00			00	←
46	88			C8	←
47	67			67	←
48	A3			A3	
49	A6			A6	
4A	AD			AD	
4B	6F			6F	
4C	93			93	←
4D	93			93	←
4E	B0			B0	←
4F	B4			B4	
50	48			48	
51	40			40	
52 to 63					

Table 5-1-2 (2).

1-1-6. Page F Address

Note 1: The ← mark shown in the adjustment data memo column indicates that the address data is fixed and same as the initial value.

Note 2: The initial adjustment data value is the value after "Page D, Page E, Page F Data Initialization" and "Page F Data Modification" have been executed. It is different from the value after all adjustments have been executed.

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
00					
01					
02					
03					
04					
05	B4	BA	BA	BA	←
06	B8	B8	B8	B8	←
07	5E	5E	5E	5E	←
08	47	47	47	47	←
09	58	58	58	58	←
0A	6B	6B	6B	6B	←
0B	8E	8E	8E	8E	←
0C					
0D					
0E					
0F					
10	00	00	00	00	
11	00	00	00	00	
12	00	00	00	00	
13	00	00	00	00	
14	00	00	00	00	
15	00	00	00	00	
16	00	00	00	00	
17	00	00	00	00	
18	00	00	00	00	
19	00	00	00	00	
1A	00	00	00	00	
1B	00	00	00	00	
1C	76	57	57	77	←
1D	08	10	10	10	←
1E	23	23	23	23	←
1F	52	52	52	52	
20	00	02	02	02	←
21	02	02	02	02	←
22	3B	3B	3B	3B	
23	00	00	00	00	←
24	7C	7C	7C	7C	←
25	80	80	80	80	←
26	1F	1F	1F	1F	←
27	00	00	00	04	←
28	84	84	86	84	←
29	00	00	00	04	←
2A	FF	FF	FF	FF	
2B	3B	3B	3B	3B	

Table 5-1-3 (1).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
2C	7D	7D	7D	7D	
2D	56	56	56	56	
2E	00	00	00	00	←
2F	00	00	00	00	←
30	A6	A6	A6	A6	
31	1A	1A	1A	1A	
32	15	15	15	15	
33	24	24	24	24	
34	8C	8C	8C	8C	
35	11	11	11	11	
36	00	00	00	00	
37	0A	0A	0A	0A	
38	00	00	00	00	
39	0A	0A	0A	0A	
3A	3C	3C	3C	3C	
3B	A0	A0	A0	A0	
3C	80	80	80	80	
3D	80	80	80	80	
3E	30	30	30	30	
3F	49	49	49	49	←
40	1B	1B	1B	1B	
41	1B	1B	1B	1B	
42	AE	AE	AE	AE	
43	42	42	42	42	
44	44	44	44	44	
45	34	34	34	34	
46	2A	2A	2A	2A	
47	89	89	89	89	
48	59	59	59	59	
49	38	38	38	38	
4A	41	41	41	41	
4B	25	25	25	25	
4C	00	00	00	00	
4D	19	19	19	19	
4E	00	00	00	00	
4F	16	16	16	16	
50	52	52	52	52	
51	52	52	52	52	
52	7A	7A	7A	7A	
53	8D	8D	8D	8D	
54	7A	7A	7A	7A	
55	55	55	55	55	←
56	A8	A8	A8	A8	
57	00	00	00	00	
58	9A	9A	9A	9A	
59	50	50	50	50	←
5A	7B	7B	7B	7B	
5B	B3	B3	B3	B3	

Table 5-1-3 (2).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
5C	99	AA	AA	AA	←
5D	70	70	70	70	←
5E	A8	A2	A2	A2	←
5F	70	70	70	70	←
60	D5	D5	D5	D5	
61	D5	D5	D5	D5	
62	EA	EA	EA	EA	
63	EA	EA	EA	EA	
64	8B	97	97	97	←
65	80	8C	8C	8C	←
66	89	97	97	97	←
67	80	8C	8C	8C	←
68	B8	B8	B8	B8	
69	B8	B8	B8	B8	
6A	B1	B1	B1	B1	
6B	B1	B1	B1	B1	
6C	80	80	80	80	
6D	80	80	80	80	
6E	80	80	80	80	
6F	80	80	80	80	
70	7D	80	80	80	←
71	7D	80	80	80	←
72	80	80	80	80	
73	80	00	00	00	
74	00	00	00	00	←
75	80	00	00	00	
76	80	00	00	00	
77	00	00	00	00	←
78	7C	92	92	92	←
79	AA	00	00	00	←
7A	A0	00	00	00	←
7B	C3	00	00	00	←
7C	0C	0C	0C	0C	←
7D	18	00	00	00	←
7E	77	77	77	77	←
7F	40	40	40	40	←
80	75	75	75	75	←
81	73	73	73	73	←
82	12	12	12	12	←
83	8A	8A	8A	8A	←
84	A5	A5	A5	A5	←
85	68	68	68	68	←
86	4A	4A	4A	4A	←
87	F0	F0	F0	F0	←
88	00	00	00	00	←
89	01	01	01	01	←
8A	6C	6C	6C	6C	←
8B	40	40	40	40	←

Table 5-1-3 (3).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
8C	68	28	28	28	←
8D	A0	60	60	60	←
8E	70	40	40	40	←
8F	40	29	29	29	←
90	68	28	28	28	←
91	70	A0	A0	A0	←
92	40	40	40	40	←
93	25	25	25	25	←
94	58	28	28	28	←
95	F0	80	80	80	←
96	40	40	40	40	←
97	3D	10	10	10	←
98	58	28	28	28	←
99	FF	FF	FF	FF	←
9A	40	40	40	40	←
9B	30	10	10	10	←
9C	78	28	28	28	←
9D	70	70	70	70	←
9E	4C	30	30	30	←
9F	06	00	00	00	←
A0	28	28	28	28	←
A1	FF	E0	E0	E0	←
A2	30	30	30	30	←
A3	10	00	00	00	←
A4	62	60	60	60	←
A5	91	91	91	91	←
A6	62	70	70	70	←
A7	B2	92	92	92	←
A8	62	70	70	70	←
A9	91	A2	A2	A2	←
AA	62	70	70	70	←
AB	A2	A3	A3	A3	←
AC	04	04	04	04	←
AD	E5	D5	D5	D5	←
AE	04	04	04	04	←
AF	F7	D6	D6	D6	←
B0	40	40	40	40	←
B1	00	00	00	00	←
B2	B3	B3	B3	B3	←
B3	B3	B3	B3	B3	←
B4	21	10	10	10	←
B5	05	01	01	01	←
B6	11	10	10	10	←
B7	06	03	03	03	←
B8	71	40	40	40	←
B9	35	32	32	32	←
BA	20	00	00	00	←
BB	00	00	00	00	←

Table 5-1-3 (4).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
BC	22	22	22	22	←
BD	80	80	80	80	←
BE	30	20	20	20	←
BF	40	40	40	40	←
C0	20	30	30	30	←
C1	50	50	50	50	←
C2	1B	2B	2B	2B	←
C3	4B	4B	4B	4B	←
C4	00	00	00	00	←
C5	00	00	00	00	←
C6	00	00	00	00	←
C7	CA	BB	BB	BB	←
C8	D9	C8	C8	C8	←
C9	DA	CA	CA	CA	←
CA	00	00	00	00	←
CB	CA	BB	BB	BB	←
CC	D9	C8	C8	C8	←
CD	DA	CA	CA	CA	←
CE	00	00	00	00	←
CF	27	27	27	27	←
D0	CA	CA	CA	CA	←
D1	00	00	00	00	←
D2	40	40	40	40	←
D3	1B	1B	1B	1B	←
D4	E0	EC	EC	EC	←
D5	A0	A0	A0	A0	←
D6	30	28	28	28	←
D7	20	1A	1A	1A	←
D8	C0	C0	C0	C0	←
D9	6A	6A	6A	6A	←
DA	60	60	60	60	←
DB	55	55	55	55	←
DC	55	55	55	55	←
DD	66	96	96	96	←
DE	25	25	25	25	←
DF	34	34	34	34	←
E0	3F	3F	3F	3F	←
E1	A0	A0	A0	A0	←
E2	00	00	00	00	←
E3	80	80	80	80	←
E4	70	70	70	70	←
E5	41	41	41	41	←
E6	1F	1F	1F	1F	←
E7	C0	C0	C0	C0	←
E8	14	14	14	14	←
E9	03	03	03	03	←
EA	00	00	00	00	←
EB	FE	FD	FD	FD	

Table 5-1-3 (5).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
EC	F5	F4	F4	F4	
ED	1A	21	21	21	←
EE	33	46	46	46	←
EF	FE	FE	FE	FE	←
F0	3C	3C	3C	3C	←
F1	24	24	24	24	←
F2	83	83	83	83	←
F3	A0	A0	A0	A0	←
F4	67	67	67	67	←
F5	4D	4D	4D	4D	←
F6	33	33	33	33	←
F7	5C	5C	5C	5C	←
F8	5C	5C	5C	5C	←
F9	5C	5C	5C	5C	←
FA	3C	3C	3C	3C	←
FB	0F	0F	0F	0F	←
FC	10	10	10	10	←
FD	2C	2C	2C	2C	←
FE	0A	0A	0A	0A	←
FF	36	36	36	36	←

Table 5-1-3 (6).

1-1-7. Page E Address

Note 1: The ← mark shown in the adjustment data memo column indicates that the address data is fixed and same as the initial value.

Note 2: The initial adjustment data value is the value after "Page D, Page E, Page F Data Initialization" and "Page E Data Modification" have been executed. It is different from the value after all adjustments have been executed.

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
00	42	72	72	72	←
01	06	06	06	06	←
02	E0	E0	E0	E0	←
03	50	50	50	50	←
04	3B	3B	3B	3B	←
05	14	14	14	14	←
06	E8	E8	E8	E8	←
07	90	90	90	90	←
08	00	00	00	00	←
09	02	02	02	02	←
0A	F3	F3	F3	F3	←
0B	A0	A0	A0	A0	←
0C	69	69	69	69	←
0D	89	89	89	89	←
0E	15	15	15	15	←
0F	50	50	50	50	←
10	5F	5F	5F	5F	←
11	69	69	69	69	←
12	93	93	93	93	←
13	AA	AA	AA	AA	←
14	65	65	65	65	←
15	44	44	44	44	←
16	A2	A2	A2	A2	←
17	63	63	63	63	←
18	90	90	90	90	←
19	33	33	33	33	←
1A	15	15	15	15	←
1B	82	82	82	82	←
1C	00	00	00	00	←
1D	F3	F3	F3	F3	←
1E	EE	EE	EE	EE	←
1F	AD	AD	AD	AD	←
20	D9	D9	D9	D9	←
21	20	20	20	20	←
22	2A	2A	2A	2A	←
23	EB	EB	EB	EB	←
24	1F	1F	1F	1F	←
25	0F	0F	0F	0F	←
26	31	31	31	31	←
27	20	20	20	20	←
28	53	53	53	53	←
29	41	41	41	41	←
2A	F8	F8	F8	F8	←
2B	10	10	10	10	←

Table 5-1-4 (1).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
2C	40	40	40	40	←
2D	60	60	60	60	←
2E	00	00	00	00	←
2F	00	00	00	00	←
30	00	00	00	00	←
31	10	10	10	10	←
32	20	20	20	20	←
33	12	12	12	12	←
34	3D	3D	3D	3D	←
35	00	00	00	00	←
36	00	00	00	00	←
37	00	00	00	00	←
38	00	00	00	00	←
39	00	00	00	00	←
3A	00	00	00	00	←
3B	20	20	20	20	←
3C	26	21	21	21	←
3D	27	24	24	24	←
3E	08	09	09	09	←
3F	09	08	08	08	←
40	CC	20	20	20	←
41	40	40	40	40	←
42	1E	1E	1E	1E	←
43	00	00	00	00	←
44	F8	00	00	00	←
45	30	22	22	22	←
46	10	10	10	10	←
47	04	00	00	00	←
48	04	04	04	04	←
49	F8	F8	F8	F8	←
4A	F8	F8	F8	F8	←
4B	60	60	60	60	←
4C	50	50	50	50	←
4D	1C	20	20	20	←
4E	00	F8	F8	F8	←
4F	48	60	60	60	←
50	40	50	50	50	←
51	1E	20	20	20	←
52	00	F8	F8	F8	←
53	80	80	80	80	←
54	FF	FF	FF	FF	←
55	DD	DD	DD	DD	←
56	B4	B4	B4	B4	←
57	94	94	94	94	←
58	74	74	74	74	←
59	62	62	62	62	←
5A	49	49	49	49	←
5B	19	19	19	19	←

Table 5-1-4 (2).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
5C	16	16	16	16	←
5D	16	16	16	16	←
5E	00	00	00	00	←
5F	00	00	00	00	←
60	F3	F5	F5	F5	←
61	EB	EB	EB	EB	←
62	00	00	00	00	←
63	00	00	00	00	←
64	00	00	00	00	←
65	00	00	00	00	←

Table 5-1-4 (3).

1-1-8. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-1-5. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② ↓ D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ **B (b)**	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (bd).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 5-1-5.

1-2. INITIALIZATION OF D, E, F PAGE DATA

1. Initialization of D, E, F Page Data

Note: If the D, E, F page data has been initialized, all adjustments need to be performed again.

Note: < >: NTSC model (CCD-TR930)
[ ]: PAL model (CCD-TR820E/TR825E/TR920E)

Adjustment page	D
Adjustment address	00 to 63
Adjustment page	F
Adjustment address	00 to FF
Adjustment page	E
Adjustment address	00 to 65

Initializing method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: <55> [51] to page: 2, address: 00.
3) Set data: <55> [51] to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the data of page: 2, address: 02 is 01.
5) Set data: 29 to page: 3, address: 00.
6) Set data: 29 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Set data: 00 to page: 0, address: 01.
8) Perform "Modification of D Page Data".

2. Modification of D Page Data

If the D, E and F page data has been initialized, change the data as shown in the following table by manual input.

Note 1: Before changing the data, set data: 01 to page: 0, address:01.

Note 2: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the new data.

Note 3: After changing the data, set data: 00 to page: 0, address: 01. Also perform "Modification of F Page Data".

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
10	00	00	00	00
11	02	06	06	07
12	7E	FC	FC	FE
13	06	01	01	06
14	17	07	17	17
15	01	01	F1	01
16	00	00	00	00
17	0C	0C	0C	0C
18	8C	8C	80	0C
19	16	16	16	16
1A	37	37	37	37
1B	15	15	15	15
1C	28	28	28	28
1D	85	81	81	81
1E	00	00	00	00
1F	48	48	48	48
20	00	00	00	01
21	30	30	30	80
22	09	08	08	09
23	30	20	25	20
24	12	12	12	12
25	64	50	50	50
26	04	04	04	04
27	F9	F9	F9	F9
2D	05	05	05	05
2E	00	00	00	00
2F	01	01	01	01
30	05	05	05	05
31	41	41	41	41
32	30	30	30	30
33	CC	CC	CC	CC
34	07	07	07	07
36	C9	C9	C9	C9
37	02	02	02	02
38	02	02	02	02
39	04	04	04	04
3A	0A	0A	0A	0A
3B	32	32	32	32
3C	00	00	00	00

Table 5-1-6 (1).

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
3D	80	80	80	80
3E		03	03	03
3F	02			
40	3F			3F
42	24			24
43	24			24
45	00			00
46	88			C8
47	67			67

Table 5-1-6 (2).

3. Modification of F Page Data

If the D, E and F page data has been initialized, change the data as shown in the following table by manual input.

Note 1: Before changing the data, set data: 80 to page: 0, address:01.

Note 2: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the new data.

Note 3: After changing the data, set data: 00 to page: 0, address: 01. Also perform "Modification of E Page Data".

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
05	B4	BA	BA	BA
06	B8	B8	B8	B8
07	5E	5E	5E	5E
08	47	47	47	47
09	58	58	58	58
0A	6B	6B	6B	6B
0B	8E	8E	8E	8E
10	00	00	00	00
11	00	00	00	00
12	00	00	00	00
13	00	00	00	00
14	00	00	00	00
15	00	00	00	00
16	00	00	00	00
17	00	00	00	00
18	00	00	00	00
19	00	00	00	00
1A	00	00	00	00
1B	00	00	00	00
1C	76	57	57	77
1D	08	10	10	10
21	02	02	02	02
27	00	00	00	04
28	84	84	86	84
5D	70	70	70	70
5F	70			
64	8B	97	97	97
65		8C	8C	8C
66	89	97	97	97
67		8C	8C	8C
70	7D	80	80	80
71	7D	80	80	80
73	80			
75	80			
76	80			
8D	A0			
8F	40			
91				
93	25	A0	A0	A0
95	F0			

Table 5-1-7 (1).

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
97	3D			
99	FF			
9A	40			
9B	30			
A1	FF			
A2	30			
A3	10			
A7	B2			
B9	35			
BE	30			
C2	1B	2B	2B	2B
C3	4B	4B	4B	4B
D4	E0	EC	EC	EC
DD		96	96	96
EB	FE	FD	FD	FD
EC	F5	F4	F4	F4
ED	1A	21	21	21
EE		46	46	46

Table 5-1-7 (2).

4. Modification of E Page Data

If the D, E and F page data has been initialized, change the data as shown in the following table by manual input.

Note 1: Before changing the data, set data: 01 to page: 0, address:01.

Note 2: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the new data.

Note 3: After changing the data, set data: 00 to page: 0, address: 01. Also perform all adjustments of this unit.

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
00		72	72	72
3D		24	24	24
40	CC	20	20	20
44		00	00	00
47		00	00	00
4B	60			
4C	50	50	50	50
4D	1C			
4F	48			
50	40	50	50	50
51	1E			

Table 5-1-8.

1-3. CAMERA SYSTEM ADJUSTMENT

Before perform the camera system adjustments, Check that the specified values of "28 MHz Origin Oscillation Adjustment", "Y OUT Level Adjustment" and "C OUT Level Adjustment" of "VIDEO SYSTEM ADJUSTMENT" are satisfied.

1. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and hall offset.

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3C, 3D
Specified Value	13 to 17 during IRIS OPEN (Note 1) 7C to 80 during IRIS CLOSE (Note 2)

Note 1: Set data: 01 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.

Note 2: Set data: 03 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 03 to page: 0, address: 03.
3) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 03 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Set data: 80 to page: F, address: 3D, and press the PAUSE button of the adjusting remote commander.
6) Set data: 40 to page: F, address: 3C, and press the PAUSE button of the adjusting remote commander.
7) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and this data is named W_2.
8) Set data: 30 to page: F, address: 3C, and press the PAUSE button of the adjusting remote commander.
9) Read the DDS display data, and this data is named W_1.
10) Set data: 01 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
11) Read the DDS display data, and this data is named K_1.
12) Set data: 40 to page: F, address: 3C, and press the PAUSE button.
13) Read the DDS display data, and this data is named K_2.
14) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 5-1-5. "Hexadecimal notation-decimal notation conversion table".)
15) Calculate X_1' using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \quad \text{.............................. Equation 1}$$

$$B' = W_1' - K_1' \quad \text{.. Equation 2}$$

$$X_1' = \frac{1680 + (48 \times A') - (16 \times B')}{A'} \quad \text{.................. Equation 3}$$

16) Convert X_1' to hexadecimal notation, and obtain X_1. (Round off to one decimal place)
17) Set data: X_1 to page: F, address: 3C, and press the PAUSE button of the adjusting remote commander.
18) Change the data of page: F, address: 3D, and adjust the DDS display data to "15".
19) Press the PAUSE button of the adjusting remote commander.
20) Set data: 03 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
21) Read the DDS display data, and this data is named W_0. If W_0 lies within the "7C" to "80" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
22) Convert W_0 to decimal notation, and obtain W_0'.
23) Calculate X_2' using the following equations (decimal notation calculation).

$$C' = W_0' - B' - 21 \quad \text{.. Equation 4}$$

$$X_2' = \frac{(105 - B') \times (X_1' - 48) + (48 \times C')}{C'} \quad \text{........ Equation 5}$$

(X_1' and B' are values obtained from equations 2 and3)

24) Convert X_2' to hexadecimal notation and obtain X_2. (Round off to one decimal place)
25) Set data X_2 to page: F, address: 3C, and press the PAUSE button of the adjusting remote commander.
26) Change the data of page: F, address: 3D, and adjust the DDS display data to "7E".
27) Press the PAUSE button of the adjusting remote commander.
28) Set data: 01 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
29) Check that the DDS display data lies within the "13" to "17" range.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 0, address: 03.
4) Set data: 00 to page: 0, address: 01.

2. G-CAM flip Discrimination Adjustment

Sets the color reproduction conditions to optimum.

Subject	Random
Measuring point	Display data of page 1 of the adjusting remote commander (Note 1)
Measuring instrument	
Adjusting page	F
Adjusting address	1F
Specified value	S1≧S2

Note 1: Displayed data of page 1 of the adjusting remote commander

1 : XX : XX
→ S2
→ S1

Adjusting method

1) Set data: 01 to page: 0, address: 01.
2) Set data: 16 to page: 0, address: 03.
3) Select page 1 of the adjusting remote commander, and compare the higher 2 digits (S1) and lower 2 digits (S2) of the 4-digit display data.
   [When S1<S2]
   Perform steps 4 onwards.
   [When S1≧S2]
   Perform steps 5 onwards.
4) Read the data of page: F, address: 1F, change the data according to the value read as shown in the following table, and press the PAUSE button of the adjusting remote commander.

Data Before Changing	Data After Changing
52	D2
D2	52

5) Set data: 00 to page: 0, address: 03.
6) Set data: 00 to page: 0, address: 01.

3. Flange Back Adjustment

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment (1)

Subject	Flange back adjustment chart (2.0m from the front of the lens) (Luminance: 200 ± 50 lux)
Measurement Point	Check operations on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	30 to 35, 4B to 4F

Adjusting method:

1) Check that at both the zoom lens TELE terminal and WIDE terminal, the center of the chart for the flange back adjustment and center of the exposure screen coincide.
2) Set data: 01 to page: 0, address: 01.
3) Check that the data of page: F, address: 30 to 35, 4B to 4F is the initial value (see table below).

Address	Data	Address	Data
30	A6	4B	25
31	1A	4C	00
32	15	4D	19
33	24	4E	00
34	8C	4F	16
35	11		

4) Check that the data of page: 2, address: 02 is 00.
5) Set data: 13 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 15 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data will be automatically input to page: F, address: 30 to 35, 4B to 4F.)
7) Check that the data of page: 2, address: 02 is "01".

Processing after Completing Adjustments

1) Turn OFF the main power supply (8.4V)
2) Perform "Flange Back Adjustment (2)".

3-2. Flange Back Adjustment (2)

Perform this adjustment after performing "Flange Back Adjustment (1)".

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Adjustment Page	F
Adjustment Address	30 to 35, 4B to 4F

Adjusting method:

1) Set the IRIS to open. (Use a ND filter)
2) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away (subjects with clear contrast such as buildings, etc.). (Nearby subjects less than 500 m away should not be in the screen.)
3) Set data: 01 to page: 0, address: 01.
4) Check that the data of page: 2, address: 02 is "00".
5) Set data: 13 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 29 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
   (Adjustment data will automatically be input to page: F, addresses: 30 to 35, 4B to 4F.)
7) Check that the data of page: 2, address: 02 is "01".

Processing after Completing Adjustments

1) Set data: 00 to page: 0, address: 01.
2) Turn OFF the main power supply (8.4V).
3) Perform "Flange Back Check".

4. Flange Back Check

Subject	Siemens star (2.0m from the front of the lens Luminance: approx. 200 lux)
Measurement Point	Check the operation on the TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Checking method:

1) Place the Siemens star 2.0m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image.
3) Set data: 02 to page: 2, address: 40.
4) Set data: 01 to page: 2, address: 41.
5) Shoot the siemens star with the zoom TELE end.
6) Turn on the auto focus.
7) Check that the lens is focused (Note 1), and turn off the auto focus
8) Set data: 10 to page: 2, address: 21.
9) Shoot the siemens star with the zoom WIDE end.
10) Check that the lens is focused.

Note 1: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on page 1 of the adjusting remote commander.

1) Set data: 0F to page: 0, address: 03.
2) Page 1 shows the state of the focus.

1 : 00 : XX
└→ (Odd: Focused
Even: Unfocused)

Processing after Completing Adjustments

1) Set data: 00 to page: 2, address: 21.
2) Set data: 00 to page: 0, address: 03.
3) Set data: 00 to page: 2, address: 40.
4) Set data: 00 to page: 2, address: 41.

5. Picture Frame Setting

Subject	Color bar chart standard picture frame (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A = B, C = D, t = 0 ± 0.1 msec

Setting method:

1) Adjust the zoom and the camera direction, and set to the specified position.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

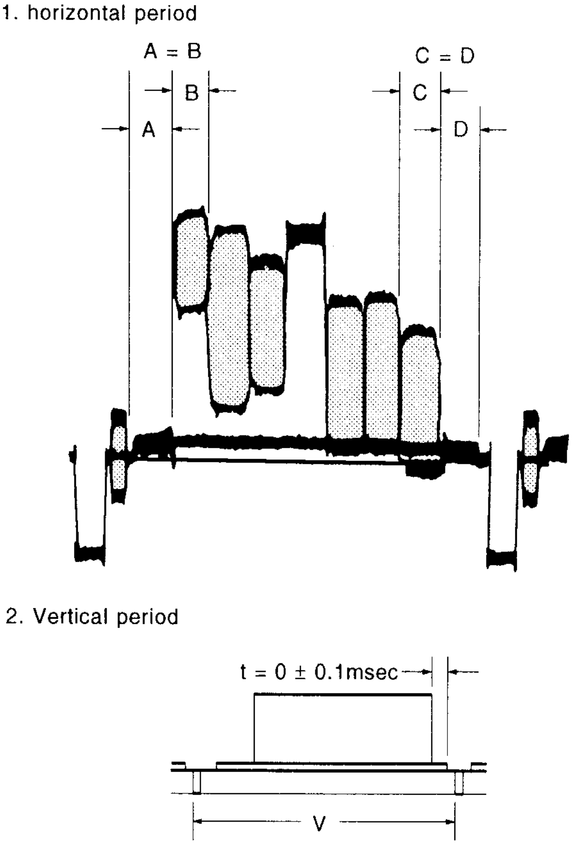


Fig. 5-1-7.

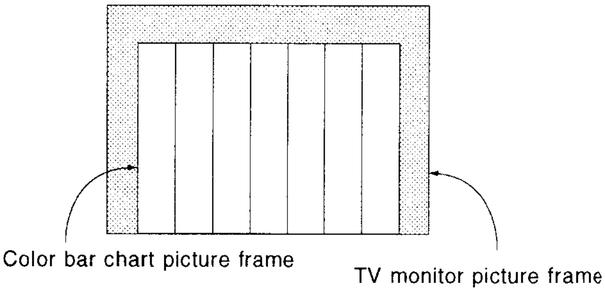


Fig. 5-1-8.

6. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that the proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	41, 43, EB, EC
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 3D to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 3F to page: F, address: 22, and press the PAUSE button of the adjusting remote commander.
4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
5) Change the data of addresses 41, 43, EB and EC of page: F, and settle each color luminance point in each color reproduction frame.
   Note 1: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses. If not, the new data will not be written to the memory.
6) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Set data: 00 to page: 2, address: 01 and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 0, address: 01.

For NTSC model (CCD-TR930)

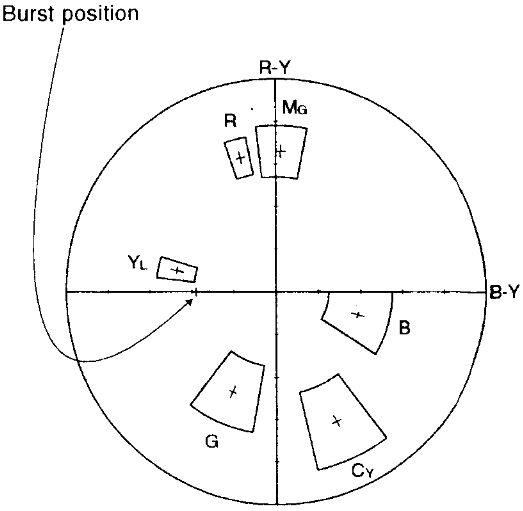


Fig. 5-1-9.

For PAL model (CCD-TR820E/TR825E/TR920E)

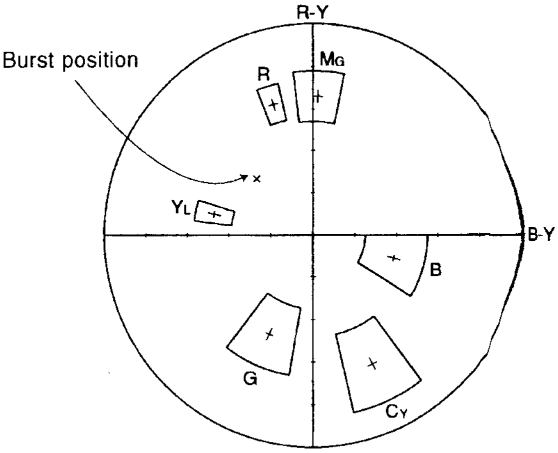


Fig. 5-1-10.

7. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.

If the level is not correct, the white balance will not be accurate.

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	49, 4A

Switch setting:

1) STEADY SHOT switch .... OFF

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 06 to page: 0, address: 03.
3) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 02 to page: 2, address: 40.
5) Set data: 0B to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to a decimal number and obtain D_1'. (Refer to Table 5-1-5. "Hexadecimal Notation-Decimal Notation Conversion Table".)
8) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation)
   When $D_2 \geqq$ D0
   $D_3' = D_1' - 21$ .... Equation 1
   When $D_2 <$ D0
   $D_3' = D_1' - 22$ .... Equation 2
9) Convert D_3' to a hexadecimal number and obtain D_3.
10) Set D_3 to page: F, address: 49, and press the PAUSE button of the adjusting remote commander.
11) Set data: 09 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to a decimal number and obtain D_4'. (Refer to Table 5-1-5. "Hexadecimal Notation-Decimal Notation Conversion Table".)
14) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation)
   When $D_5 \geqq$ F0
   $D_6' = D_4' - 13$ .... Equation 3
   When $D_5 <$ F0
   $D_6' = D_4' - 14$ .... Equation 4
15) Convert D_6' to a hexadecimal number and obtain D_6.
16) Set D_6 to page: F, address: 4A, and press the PAUSE button of the adjusting remote commander.

Note 1: The right four digits of the display data at the right bottom side of the EVF and monitor TV is the LIGHT LEVEL data. If the lower digits change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the average value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 2, address: 40.
4) Set data: 00 to page: 0, address: 03.
5) Set data: 00 to page: 0, address: 01.

8. MAX GAIN Adjustment

Setting the minimum illumination.

If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E
Specified Value	NTSC model: B0 to B8 PAL model: B6 to BE

Note 1: NTSC model: CCD-TR930
PAL model: CCD-TR820E/TR825E/TR920E

Switch setting:

1) STEADY SHOT switch.. OFF

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
3) Set data: 01 to page: 0, address: 03.
4) Set data: 02 to page: 2, address: 40.
5) Set data: 40 to page: 2, address: 56.
6) Set data: 19 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Change the data of page: F, address: 3E and adjust so that the DDS display data (Note 2) lies within the specified value.
8) Press the PAUSE button of the adjusting remote commander.

Note 2: The right two digits of the display data at the right bottom side of the EVF and monitor TV is the object data. If the data change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the avarage value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 2, address: 40.
4) Set data: 00 to page: 2, address: 56.
5) Set data: 00 to page: 0, address: 03.
6) Set data: 00 to page: 0, address: 01.

9. Auto White Balance Standard Data Input

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	2A to 2D

Note 1: Perform "Color Reproduction Adjustment" before this adjustment.

Note 2: Check that the data of page: 2, address: 02 is 00. If not, turn the power of the unit OFF/ON.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Wait for 2 seconds.
3) Set data: 11 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Set data: 0D to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is taken in, the data will be automatically input to addresses 2A to 2D of page F.)
5) Check that the data of page: 2, address: 02 is 01.
6) Perform "Auto White Balance Adjustment".

Processing after Completing Adjustments

1) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 0, address: 01.

10. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	47, 48
Specified Value	R ratio: 2B40 to 2BC0 B ratio: 5E40 to 5EC0

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 01 to page: 0, address: 01.
3) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 3F to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Set data: 04 to page: 0, address: 03.
6) Change the data of page: F, address: 47, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to the R ratio specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Set data: 05 to page: 0, address: 03.
9) Change the data of page: F, address: 48, and adjust the average value of the DDS display data to the B ratio specified value.
10) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 0, address: 03.
4) Set data: 00 to page: 0, address: 01.

11. White Balance Check

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-11. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 0F to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Check that the center of the white luminance point is within the circle shown in Fig. 5-1-11.A.
4) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Set data: 23 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Place the C14 filter on the lens.
7) Check that the center of the white luminance point settles in the circle shown in Fig. 5-1-11. B.
8) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 5-1-11. C.

Processing after Completing Adjustments

1) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.

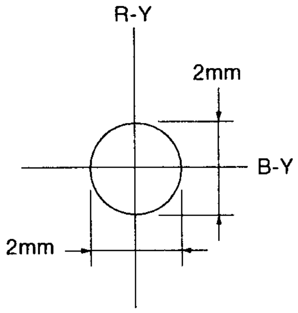

R-Y
2mm
B-Y
2mm

Fig. 5-1-11. A

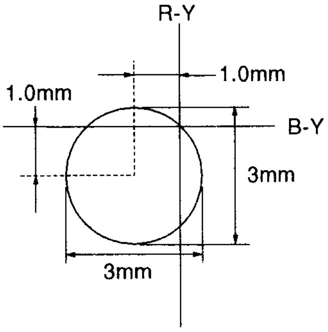

R-Y
1.0mm
1.0mm
B-Y
3mm
3mm

Fig. 5-1-11. B

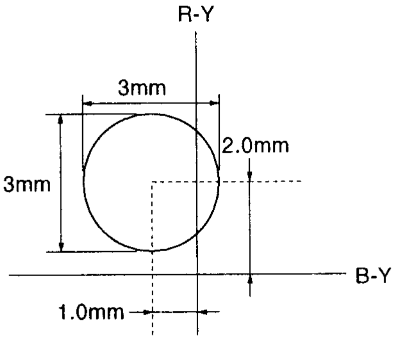

R-Y
3mm
2.0mm
3mm
B-Y
1.0mm

Fig. 5-1-11. C

12. Velocity Sensor Sensitivity Adjustment

- This adjustment is performed only when replacing the velocity sensor.
  Although this adjustment need not be performed when the circuit is damaged, etc., check the operations.
- Note down the sensitivity displayed on the velocity sensor of the repair parts. At this time, note down also to which board it was attached to.
  Be sure to check because if attached incorrectly, the screen will vibrate up and down or left and right during hand-shake correction operations.

Precautions on Parts Replacement

There are two types of repair parts-ENC05EA and ENC05EB. Replace the broken sensor with a same type of sensor. If ENC05EA and ENC05EB are attached correctly, the screen will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement.

Precautions on Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it is dropped, the the balance of the oscillator will be disrupted and operations will not be performed properly.

Adjusting page	F
Adjusting address	50, 51

Note: The sensor sensitivity of SE451 and SE452 of the SE-61 board is written only on the repair parts.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Read the sensor sensitivity written on SE452 of the SE-61 board, and this data is named S_{452}.
3) Read the sensor sensitivity written on SE451 of the SE-61 board, and this data is named S_{451}.
4) Calculate D_{50}' and D_{51}' using the following equation (decimal calculation).
   NTSC model
   $$D_{50}' = \frac{135}{S_{452}}$$
   $$D_{51}' = \frac{130}{S_{451}}$$
   PAL model
   $$D_{50}' = \frac{180}{S_{452}}$$
   $$D_{51}' = \frac{146}{S_{451}}$$
5) Convert D_{50}' and D_{51}' into hexadecimal digits, to obtain D_{50} and D_{51}. (Round off decimal points)
6) Set data: D_{50} to page: F, address: 50, and press the PAUSE button of the adjusting remote commander.
7) Set data: D_{51} to page: F, address: 51, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Set data: 00 to page: 0, address: 01.
2) Check that the hand-shake correction operations have been performed normally.

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (COLOR EVF model : CCD-TR930/TR920E)

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note 3: Set the VF PW-SAVE (Menu display) to "OFF" position, unless specified otherwise.

[Adjusting connector]

Most of the measuring points for adjusting the view-finder are concentrated in CN207 of the VC-190 board.

Connect the measuring instruments via the CPC-7 jig (J-6082-382-A).

The following table shows the Pin No. and signal name of CN207.

Pin No.	Signal name	Pin No.	Signal name
1	PB PCM RF	9	EZ I/O
2	REC RF	10	EVF UNREG (–)
3	RF SWP	11	EVF UNREG
4	CAP FG	12	EVF VG
5	REG GND	13	VCO
6	PB RF	14	BPF MON
7	RF AGC IN	15	RF AGC OUT
8	REC AFM	16	AFC FO

Table 5-1-9.

[Power Supply Voltage]

Adjust the power supply voltage so that the battery terminal voltage becomes 8.4 ± 0.1 Vdc .

1. EVF Initial Data Input

Mode	Camera
Subject	Arbitrary
Adjustment Page	D
Adjustment Address	40 to 51

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Select page: D, and input the data in the following table.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.
3) Set data: 00 to page: 0, address: 01.

Address	Data	Remark
40	3F	Fixed value
41	00	Fixed value
42	24	Fixed value
43	24	Fixed value
44	82	Fixed value
45	00	Fixed value
46	88 (NTSC), C8 (PAL)	Fixed value
47	67	Fixed value
48	A3	
49	A6	
4A	AD	
4B	6F	
4C	93	Fixed value
4D	93	Fixed value
4E	B0	Fixed value
4F	B4	
50	48	
51	40	

Table 5-1-10.

2. VCO Adjustment (VF-112 board)

Set the VCO freerun frequency. If deviated, the EVF screen will be blurred.

Mode	Camera
Subject	Arbitrary
Measurement point	Pin ⑬ of CN207 (VCO) on VC-190 board
Measuring instrument	Oscilloscope (DC range)
Adjustment page	D
Adjustment address	4F
Specified value	A = 1.8 ± 0.1Vdc

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Check the GND level of the oscilloscope.
3) Change the data of page: D, address: 4F, and set the PCO output voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 0, address: 01.

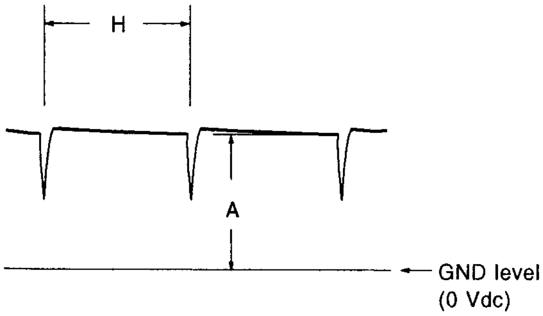


Fig. 5-1-12.

3. Bright Adjustment (VF-112 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement point	Pin ⑫ of CN207 (EVF VG) on VC-190 board
Measuring instrument	Oscilloscope
Adjustment page	D
Adjustment address	48
Specified value	A = 7.1 ± 0.1 V

Connection:

1) Connect Pin ⑫ and Pin ⑤ (GND) of CN207 with a 3.3 kΩ resistor.

   3.3 kΩ resistor: 1-249-423-11

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Input the following data to page: D, address: 40 to 45.

   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	00	00	00	00	00	00

3) Change the data of page: D, address: 48, and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Input the following data to page: D, address: 40 to 45.

   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	3F	00	24	24	82	00

6) Set data: 00 to page: 0, address: 01.

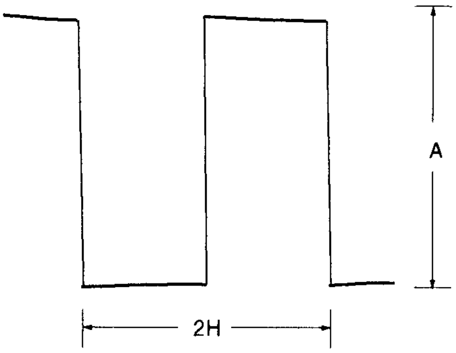


Fig. 5-1-13.

4. Contrast Adjustment (VF-112 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement point	Pin ⑫ of CN207 (EVF VG) on VC-190 board
Measuring instrument	Oscilloscope
Adjustment page	D
Adjustment address	4B
Specified value	A = 1.50 ± 0.1V (NTSC) A = 1.40 ± 0.1V (PAL)

Connection:

1) Connect Pin ⑫ and Pin ⑤ (GND) of CN207 with a 3.3 kΩ resistor.
   3.3 kΩ resistor: 1-249-423-11

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	00	27	00	00	00	00

3) Change the data of page: D, address: 4B, and set the voltage (A) between white 50% and the pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	3F	00	24	24	82	00

6) Set data: 00 to page: 0, address: 01.

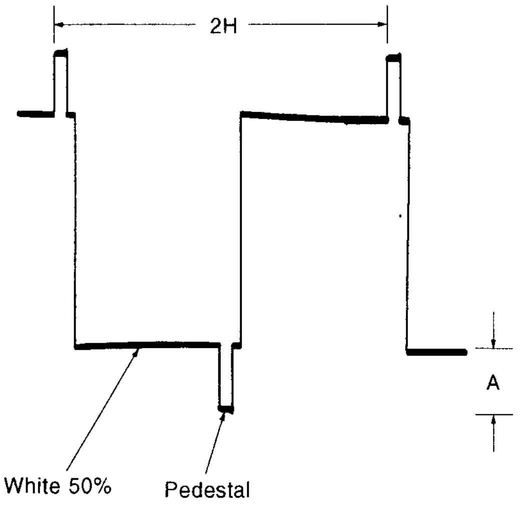


Fig. 5-1-14.

5. Backlight Consumption Current Adjustment (VF-111 board)

Set the backlight luminance and color temperature.
If deviated, the image may become dark or bright.

Mode	Camera
Subject	Arbitrary
Measurement point	+ Probe: Pin ⑪ of CN207 (EVF UNREG) on VC-190 board – Probe: Pin ⑩ of CN207 (EVF UNREG(–)) on VC-190 board
Measuring instrument	Digital voltmeter
Adjustment page	D
Adjustment address	50
Specified value	A = 20.0 ± 1.0 mVdc

Note: Adjust 30 seconds after running on the power supply.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Adjust the power supply voltage so that the voltage of Pin ⑪ of CN207 (EVF UNREG) on VC-190 board is 6.00 ± 0.05 Vdc.
3) Change the data of page: D, address: 50, and set the voltage difference (A) between Pin ⑪ of CN207 (EVF UNREG) and Pin ⑩ of CN207 (EVF UNREG(–)) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 0, address: 01.

6. White Balance Adjustment (VF-112 board)

Correct the white balance.

If deviated, the reproduction of the EVF screen may degenerate.

Mode	Camera
Subject	Arbitrary
Measurement point	Check on EVF screen
Measuring instrument	
Adjustment page	D
Adjustment address	49, 4A
Specified value	The EVF screen should not be colored.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	00	27	00	00	00	00

3) Set the data of page: D, address: 49 and 4A to the initial value.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	49	4A
Data	A6	AD

4) Check that the EVF screen is not colored. If colored, change the data of page: D, address: 49 and 4A so that the EVF screen is not colored.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.
5) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	3F	00	24	24	82	00

6) Set data: 00 to page: 0, address: 01.

7. AUTO ON Level Adjustment (VF-111 board)

Adjust the power save sensor, and maintain at the level at which the backlight is AUTO ON.

Mode	Camera
Subject	Arbitrary
Measurement point	Check that the backlight lights up
Measuring instrument	
Adjustment page	D
Adjustment address	51
Specified value	AUTO OFF distance: Above 10 cm, less than 15 cm (Note2) AUTO ON distance: Above 9 cm, less than 11 cm (Note2)

Note 1: Do not perform this adjustment in strong light or under lights.

Note 2: The specified value is the adjustment value during adjustment. The specified value during operation check is as follows.
AUTO OFF distance: Above 9 cm, less than 15 cm
AUTO ON distance: Above 7 cm, less than 13 cm

Switch setting:

1) Set the "VF PW-SAVE" on the menu display to "ON".

Adjustment preparation:

1) Prepare a 30 cm X 30 cm white paper, and place it 10 cm away from the EVF lens.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	00	00	00	00	00	00

3) Increase the data of page: D, address: 51, and turn on the backlight.
4) Decrease the data of page: D, address: 51 slowly, and turn off the backlight.
5) Press the PAUSE button of the adjusting remote commander.
6) Move the white paper away from the EVF lens and turn off the backlight. Then move it to the lens slowly, and check that the backlight lights up when the distance (AUTO ON distance) is the specified value.
7) Move the white paper near the EVF lens so that the backlight lights up. and then move it away, and check that the backlight goes off when the distance (AUTO OFF distance) is the specified value.
8) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	3F	00	24	24	82	00

9) Set data: 00 to page: 0, address: 01.

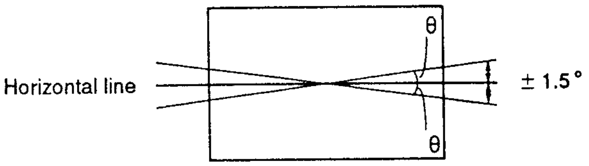
1-5. MONOCHROME ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (CCD-TR820E/TR825E)

1-5-1. Horizontal Slant Check

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Specified Value	± 1.5°

Adjusting method:

1) Adjust RV904 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Check that the difference between the horizontal line and the tilt of the black mask satisfies the specified value.



Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 5-1-15.

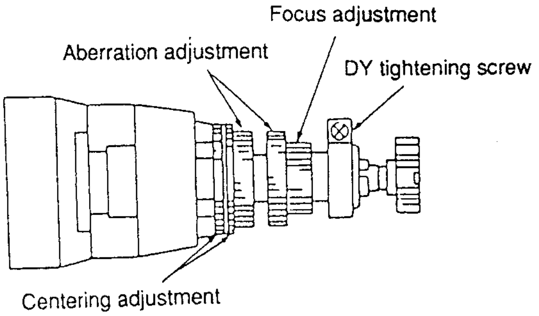


Fig. 5-1-16.

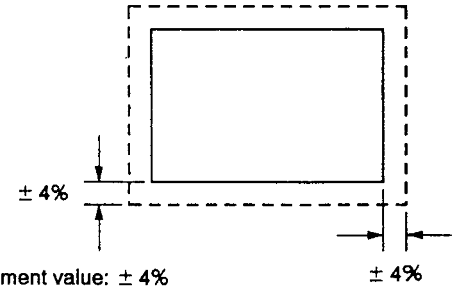
1-5-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Specified Value	± 4%

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 5-1-16.)

   Note: As the centering position changes due to earth magnetism, rotate it 360° in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value: ± 4%

Fig. 5-1-17.

1-5-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 5-1-16.)

1-5-4. Aberration Adjustment

Mode	VTR stop
Signal	Dot pattern
Specified Value	$b_1 \leqq 2 \cdot a_1$ $b_2 \leqq 0.8 \cdot a_2$

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot satisfies the specified value.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

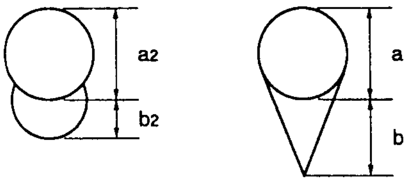


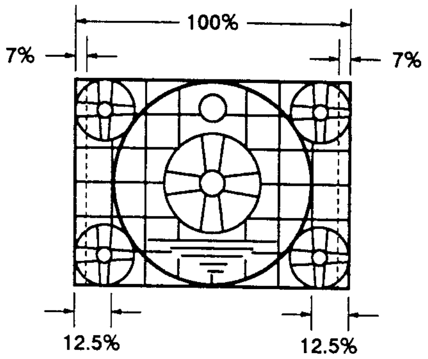
Fig. 5-1-18.

1-5-5. Horizontal Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Adjusting Element	C909 (SOL901) (Fig. 5-1-21.)
Specified Value	14 ± 6%

Adjusting method:

1) Rotate RV903, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV904 so that the brightness is the normal level.
3) Solder or unsolder SOL901 pattern of the H size adjustment capacitor (C909) to "short" or "open", so that the horizontal direction over scan becomes 14 ± 6% (Left and right totals).



SOL901	Size H
Open	Small
Short	Big

Fig. 5-1-19.

1-5-6. Vertical Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Adjusting Element	RV903 (Fig. 5-1-21.)
Specified Value	10 ± 3%

Adjusting method:

1) Adjust RV903 so that the vertical direction over scan becomes 10 ± 3% (Top and bottom totals).

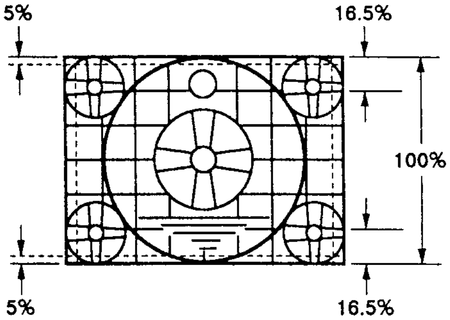


Fig. 5-1-20.

1-5-7. Brightness Adjustments (VF-99 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Specified Value	RV904 (Fig. 5-1-21.)

Adjusting method:

1) Rotate RV904, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

"1-5-5. Horizontal Amplitude Adjustment" and "1-5-6. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform "1-5-7. Brightness, Contrast Adjustments" again.

Moreover, check the focus, and if it found to be vague, perform "1-5-3. Focus Adjustment" and "1-5-4. Aberration Adjustment".

ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

VF-99 BOARD (SIDE A)

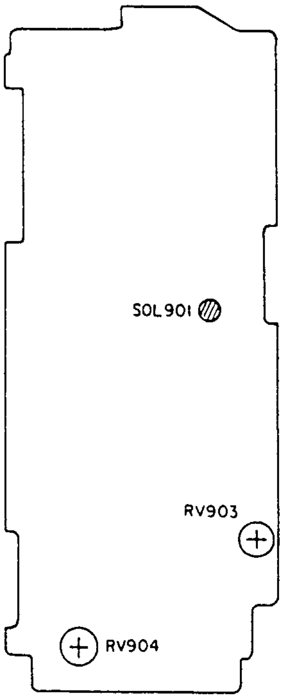


Fig. 5-1-21.

5-2. MECHANICAL SECTION ADJUSTMENT

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume- "8 mm Video Mechanism Adjustment Manual VII B Mechanism".

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "Section 2 DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Set data: 01 to page: 0, address: 01.
6) Set data: 01 to page: F, address: 29, and press the PAUSE button of the adjusting remote commander.
7) Set data: 04 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
8) Disconnect the power supply of the unit.

By carrying out the above procedure, the unit can be operated without loading a cassette.
Be sure to carry out "Processing after Operations" after checking the operations.
Set the data of page: D, address: 10 to the following if the sensor ineffective mode, forced PLAYER (VTR) power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode..........06
Forced camera power supply ON mode......05

[Processing after Operations]

1) Set data: 01 to page: 0, address: 01.
2) Set data: 00 to page: F, address: 29, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 0, address: 01.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 01.
5) Select page: F, address: 29, and set data: 04 and press the PAUSE button of the adjusting remote commander.
(Be sure to perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
Channel 1: Pin ⑥ of CN207 of VC-190 board
External trigger: Pin ③ of CN207 of VC-190 board
(Connect the oscilloscope via the CPC-7 jig (J-6082-382-A).)
7) Playback the alignment tape for tracking.
WR5-1NP: For NTSC model
WR5-1CP: For PAL model
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
If not flat, perform necessary adjustment according to the separate "8 mm Video Mechanical Adjustment Manual VII (B Mechanism)".
9) Perform "Processing after operations", after completing adjustments.

CN207 of VC-190 board

Pin No.	Signal Name	Pin No.	Signal Name
1	PB PCM RF	9	EZ I/O
2	REC RF	10	EVF UNREG (–)
3	RF SWP	11	EVF UNREG
4	CAP FG	12	EVF VG
5	REG GND	13	VCO
6	PB RF	14	BPF MON
7	RF AGC IN	15	RF AGC OUT
8	REC AFM	16	AFC FO

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 29, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 0, address: 01, and set data: 00.
6) Remove the power supply from the unit.

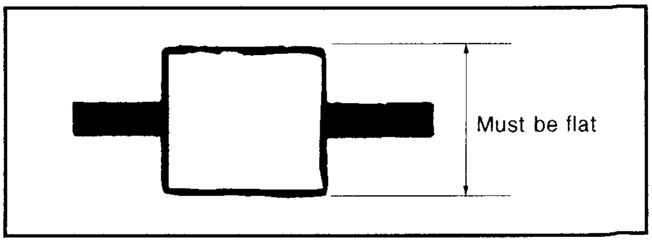


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 5-66.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape

    [For NTSC model)
    - For tracking adjustment (WR5-1NP)
      Part Code: 8-967-995-02
    - For video frequency characteristics adjustment (WR5-7NE) Part Code: 8-967-995-13
    - For checking Standard 8 mode operations
      For LP (WR5-4NL)
      Part Code: 8-967-995-51
      For SP (WR5-5NSP)
      Part Code: 8-967-995-42
      Note: The following alignment tapes can also be used.
      1) WR5-4NSP (8-967-995-41)
    - For checking Hi8 mode operations
      For SP (WR5-8NSE)
      Part Code: 8-967-995-43
      For LP (WR5-8NLE)
      Part Code: 8-967-995-52
    - For checking AFM stereo operations (WR5-9NS)
      Part Code: 8-967-995-23
      For checking BPF adjustment (WR5-11NS)
      Part Code: 8-967-995-71

    [For PAL model]
    - For tracking adjustment (WR5-1CP)
      Part Code: 8-967-995-07
    - For video frequency characteristics adjustment (WR5-7NE) Part Code: 8-967-995-18
    - For checking Standard 8 mode operations
      For LP (WR5-4CL)
      Part Code: 8-967-995-56
      For SP (WR5-5CSP)
      Part Code: 8-967-995-47
      Note: The following alignment tapes can also be used.
      1) WR5-3CL (8-967-995-36)
      2) WR5-4CSP (8-967-995-46)
    - For checking Hi8 mode operations
      For SP (WR5-8CSE)
      Part Code: 8-967-995-48
      For LP (WR5-8CLE)
      Part Code: 8-967-995-57
    - For checking AFM stereo operations (WR5-9CS)
      Part Code: 8-967-995-28
      For checking BPF adjustment (WR5-11CS)
      Part Code: 8-967-995-76
12) Remote commander for adjustment (J-6082-053-B)
13) CPC-7 jig Part Code: J-6082-382-A
14) Power code Part Code: J-6082-223-A
15) AFM DEV jig (J-6082-312-A)
16) IR Receiver jig (J-6082-383-A)

3-1-2. Precautions in Adjustment

1) The adjustments of this unit are performed in the VTR mode (S VIDEO terminal input or VIDEO terminal input mode) or in the camera mode.
   To set to the VTR mode, set the power switch to "VTR or PLAYER" or set to the "forced VTR power supply ON mode" (Note 1) using the adjusting remote commander.
   To set to the camera mode, set the power switch to "CAMERA" or set to the "forced camera+VTR power supply ON mode" (Note 2) using the adjusting remote commander.
   After completing adjustments, be sure to exit the "forced VTR power supply ON mode" or "forced camera+VTR power supply ON mode". (Note 3)
2) The front panel block (MI-29 board) need not be connected except in "IR Transmitter Adjustments" and "Battery End Adjustments". To remove, disconnect the following connector.
   1. CN303 (26P 0.5 mm) of MI-29 board
      (Refer to Page 5-60)
3) The viewfinders (VF-111, 112 boards (COLOR EVF model), VF-99 board (B/W EVF model) need not be connected except in "Battery End Adjustments". To remove, disconnect the following connector.
   1. CN111 (20P. 0.5 mm) of VC-190 board
4) By setting the "forced power supply ON mode", the video section can be operated even if the cabinet (R) (power switch, control switch block) has been removed. When removing the cabinet (R), disconnect the following connector. However, as removing CN1953 means removing the lithium 3V power supply, data such as date, time, user-set menus will be lost. After adjustments, reset these data. If CN1953 has been removed, the self-diagnosis data, data on history of use (total drum rotation time, date of when the user first turned the power ON, and the date of when condensation occurred the last time) will be lost. Before removing, note down the self-diagnosis data and data of page: 3, address: E0 to E9. (Refer to the "Service Mode" for the data on the history of use.)
   1. CN1953 of VC-190 board (28P, 0.5 mm)
   After completing the adjustment, be sure to exit the "forced power supply ON mode".
5) The lens block (CD-166 board) and accessory shoe are not required for the adjustments of the video section (except in "Battery End Adjustment"). To remove, disconnect the following three connectors.
   1. CN112 of VC-190 board (16P, 0.5 mm)
   2. CN113 of VC-190 board (23P, 0.5 mm)
   3. CN205 of VC-190 board (10P, 0.5 mm)
      (CCD-TR930/TR825E/TR920E)

Note 1: Setting the "forced VTR power supply ON mode"

1) Set data: 01 to page: 0, address: 01.
2) Set data: 02 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
   Hereafter, VTR operations can be performed even if the cabinet (R) has been removed.
   After completing adjustments, be sure to exit the "forced VTR power supply ON mode".

Note 2: Setting the "forced camera+VTR power supply ON mode" (camera mode)

1) Set data: 01 to page: 0, address: 01.
2) Set data: 03 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
   Hereafter, VTR operations can be performed even if the cabinet (R) has been removed.
   After completing adjustments, be sure to exit the "forced power supply ON mode".

Note 3: Exiting the "forced power supply ON mode"

1) Set data: 01 to page: 0, address: 01.
2) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 0, address: 01.

3-1-3. Connector for Adjustments

Some video section adjustment points are concentrated on the VC-190 board CN207. Connect the measuring instruments via a CPC-7 jig (J-6082-382-A).

Pin No.	Signal Name	Pin No.	Signal Name
1	PB PCM RF	9	EZ I/O
2	REC RF	10	EVF UNREG (–)
3	RF SWP	11	EVF UNREG
4	CAP FG	12	EVF VG
5	REG GND	13	VCO
6	PB RF	14	BPF MON
7	RF AGC IN	15	RF AGC OUT
8	REC AFM	16	AFC FO

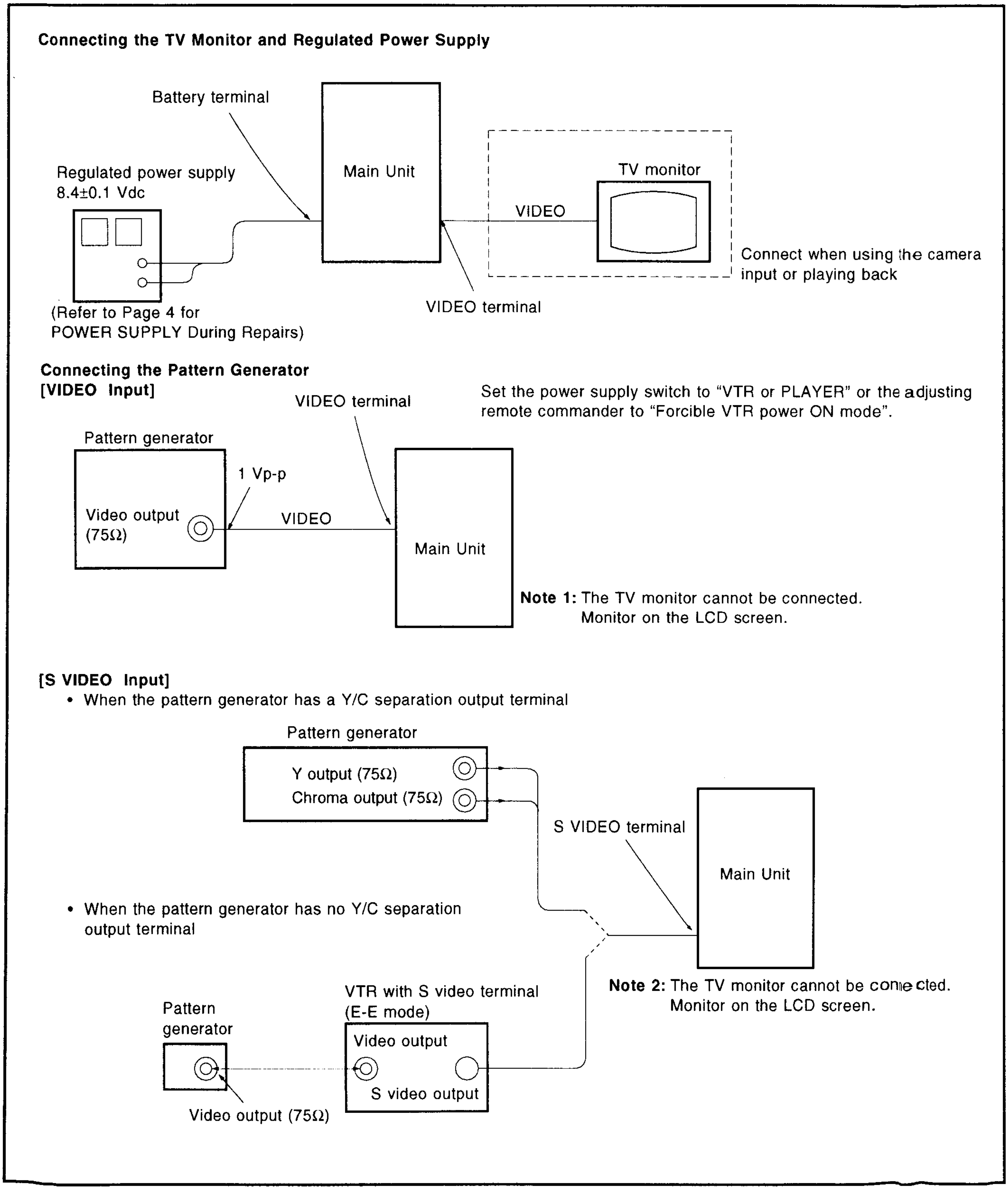
Table 5-3-1.

3-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 5-3-1 according to the input terminal specifications (VIDEO input or S VIDEO input), and perform the adjustments.
The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications.

Note 1: If the VIDEO input is used for adjustments which specify for the S VIDEO input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications.

Note 2: When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by the VTR. It is recommended that a pattern generator with a Y/C separation output terminal be used as much as possible.



Connecting the TV Monitor and Regulated Power Supply

Battery terminal
Regulated power supply
8.4±0.1 Vdc
Main Unit
TV monitor
VIDEO
VIDEO terminal

Connect when using the camera input or playing back

(Refer to Page 4 for POWER SUPPLY During Repairs)

Connecting the Pattern Generator
[VIDEO Input]

Set the power supply switch to "VTR or PLAYER" or the adjusting remote commander to "Forcible VTR power ON mode".

VIDEO terminal
Pattern generator
1 Vp-p
Video output
(75Ω)
VIDEO
Main Unit

Note 1: The TV monitor cannot be connected. Monitor on the LCD screen.

[S VIDEO Input]

- When the pattern generator has a Y/C separation output terminal

Pattern generator
Y output (75Ω)
Chroma output (75Ω)
S VIDEO terminal
Main Unit

- When the pattern generator has no Y/C separation output terminal

Pattern
generator
VTR with S video terminal
(E-E mode)
Video output
S video output
Video output (75Ω)

Note 2: The TV monitor cannot be connected. Monitor on the LCD screen.

Fig. 5-3-1.

3-1-5. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

1. S VIDEO input

Connect the oscilloscope to the Y signal terminal of the S VIDEO terminal, and check that the sync signal of the Y signal is approximately <0.286> [0.30]V and that the amplitude of the video section is approximately <0.714> [0.70]V. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to the chroma signal terminal of the S VIDEO terminal, and check that the burst signal amplitude of the chroma signal is approximately <0.286>[0.30]V and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30:0.66. The Y and chroma signals used in the adjustment are shown in Fig. 5-3-2.

< >: NTSC model (CCD-TR930)

[ ]: PAL model (CCD-TR820E/TR825E/TR920E)

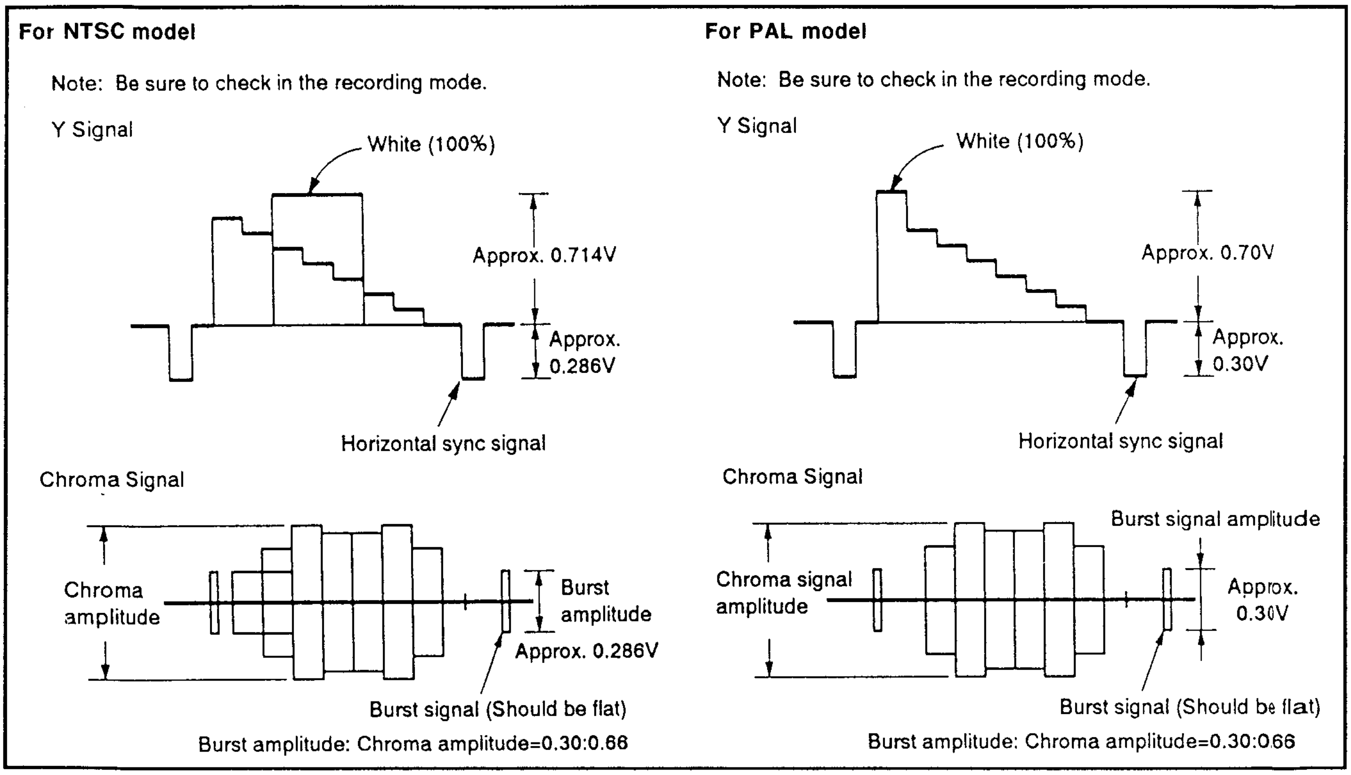

For NTSC model
Note: Be sure to check in the recording mode.
Y Signal
White (100%)
Approx. 0.714V
Approx. 0.286V
Horizontal sync signal
Chroma Signal
Chroma amplitude
Burst amplitude
Approx. 0.286V
Burst signal (Should be flat)
Burst amplitude: Chroma amplitude=0.30:0.66
For PAL model
Note: Be sure to check in the recording mode.
Y Signal
White (100%)
Approx. 0.70V
Approx. 0.30V
Horizontal sync signal
Chroma Signal
Burst signal amplitude
Chroma signal amplitude
Approx. 0.30V
Burst signal (Should be flat)
Burst amplitude: Chroma amplitude=0.30:0.66

Fig. 5-3-2. Color bar signal of pattern generator

2. VIDEO input

Connect the oscilloscope to the VIDEO terminal, and check that the sync signal amplitude of the video signal is approximately <0.286> [0.30]V, the amplitude of the video section is approximately <0.714> [0.70]V, the amplitude of the burst signal is approximately <0.286> [0.30]V and flat, and that the level ratio of the burst signal to the "red" signal is 0.30 : 0.66.

The video signal (color bar) used for adjusting the VTR section is shown in Fig. 5-3-3.

< >: NTSC model (CCD-TR930)

[ ]: PAL model (CCD-TR820E/TR825E/TR920E)

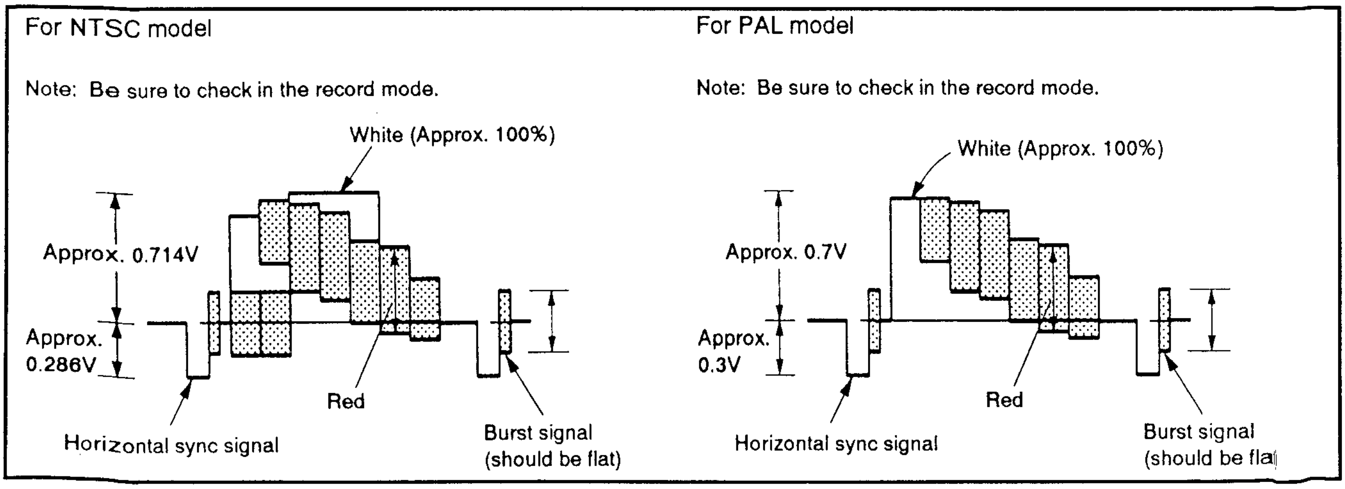

For NTSC model
Note: Be sure to check in the record mode.
White (Approx. 100%)
Approx. 0.714V
Approx. 0.286V
Red
Horizontal sync signal
Burst signal (should be flat)
For PAL model
Note: Be sure to check in the record mode.
White (Approx. 100%)
Approx. 0.7V
Approx. 0.3V
Red
Horizontal sync signal
Burst signal (should be flat)

Fig. 5-3-3. Color Bar Signal of Pattern Generator

3-1-6. How to Set the REC Mode in the Model without REC switch (AEP, UK model)

Note: The chroma signal cannot be input and recorded.

1. REC key forbidden accept mode cancel
   1. Connect the adjustment remote commander to the LANC terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote commander.
   4. Select the page: 0 address: 01, and set the data to 01.
   5. After memorizing data of address: 12 of page: D, Set data: FE to the address.
   6. Press PAUSE button on the adjustment remote commander.

The REC key is accepted through the above procedure.

2. REC mode setting
   1. Turn off the HOLD switch of the adjusting remote commander.
   2. Press REC buttons of the adjusting remote commander.
   3. Perform "3. Procedure after completed the adjustment" after completing adjustment .

3. Procedure after completed the adjustment
   Be sure to return the mode to REC key forbideden accept mode after adjustment.
   1. Connect the adjustment remoter commander.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote commander.
   4. Select the page: 0 address: 01, and set the data to 01.
   5. Set data memorized at step 1)-5 to address: 12 of page: D.
   6. Press PAUSE button on the adjustment remote controller.
   7. Select the page: 0 address: 01, and set the data to 00.

3-1-7. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record -ing mode	Tape type	Tape speed	Usage
Tracking WR5-1NP (NTSC) WR5-1CP (PAL)	Standard 8 mm	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE (NTSC) WR5-7CE (PAL)	Hi8	ME	SP (NTSC) LP (PAL)	Frequency characteristics adjustment
Operation check (SP mode) WR5-5NSP (NTSC) WR5-5CSP (PAL)	Standard 8 mm	MP	SP	Checking operations
Operation check (SP mode) WR5-8NSE (NTSC) WR5-8CSE (PAL)	Hi8	ME	SP	
Operation check (LP mode) WR5-4NL (NTSC) WR5-4CL (PAL)	Standard 8 mm	MP	LP	
Operation check (LP mode) WR5-8NLE (NTSC) WR5-8CLE (PAL)	Hi8	ME	LP	
AFM stereo Operation check WR5-9NS (NTSC) WR5-9CS (PAL)	Standard 8 mm	MP	SP	AFM stereo Checking operations
BPF adjustment WR5-11NS (NTSC) WR5-11CS (PAL)	Standard 8 mm	MP	SP	BPF adjustment

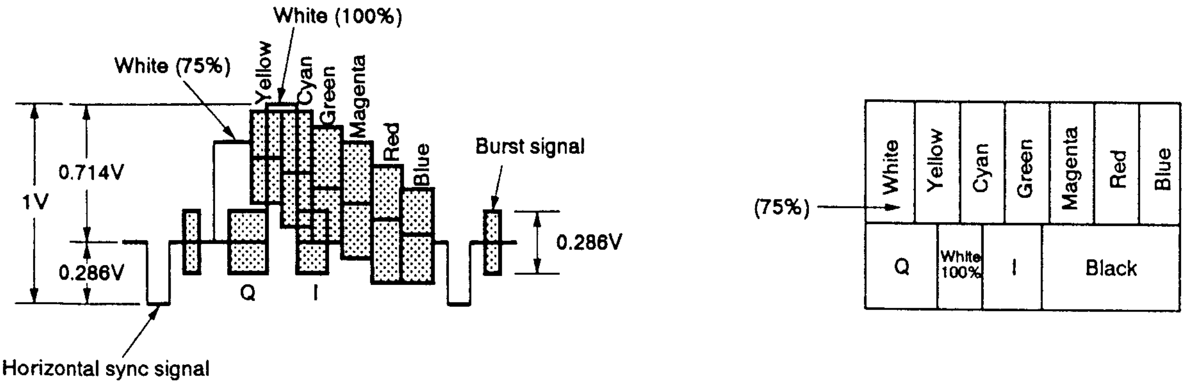
Tape type
MP.... Particle type metal tape
ME ... Evaporated type metal tape

Table 5-3-2.

Fig. 5-3-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the VIDEO terminal (Terminated at 75 Ω).

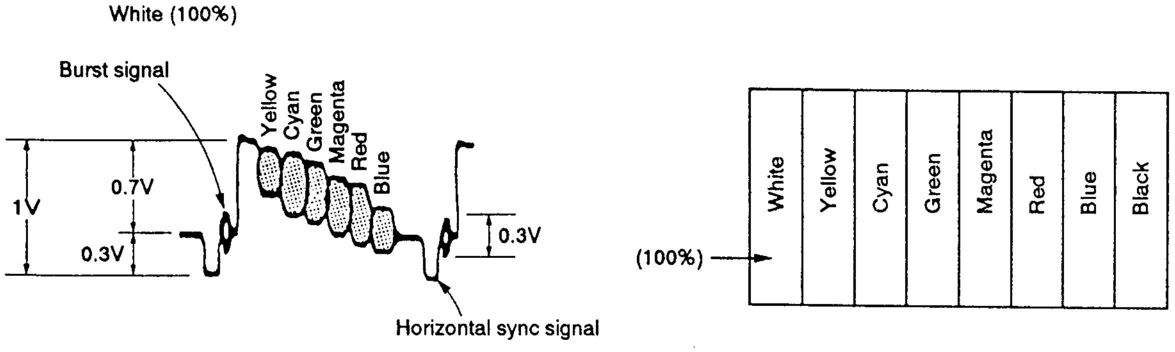
For NTSC model


White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.714V
1V
0.286V
Q
I
0.286V
Horizontal sync signal
White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
Q
White 100%
I
Black

Color bar signal waveform

Color Bar Pattern

For PAL model


White (100%)
Burst signal
Yellow
Cyan
Green
Magenta
Red
Blue
0.7V
1V
0.3V
0.3V
Horizontal sync signal
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black
(100%)

Color bar signal waveform

Color bar pattern

Fig. 5-3-4. Color Bar Signals of the Alignment Tape

3-1-8. Input/Output Level and Impedance

Video input/output

Phono jack, 1 Vp-p, 75Ω,
unbalanced, sync negative

S video input/output

4-pin mini DIN
Luminance signal:
1Vp-p, 75Ω, unbalanced, sync negative
Chrominance signal:
0.3Vp-p 75Ω, unbalanced

Audio input/output

Phono jack,
Input: -7.5 dBs, input impedance more than 47 kΩ
Output: -7.5 dBs, (at load impedance 47 kΩ), impedance less than 2.2 kΩ

3-1-9. Recording Mode (Standard 8/Hi8) switching

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/ Hi8) switches automaticaly according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-1-10. Service Mode

Additional note on adjustment

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) After data on page: D and F is restored, return data of the address: 01 on page: 0 to 00. And when data on page: 2 or page: 3 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Set data: 01 to page: 0, address: 01 before setting the data of page D and F.

Page F	Address 29

Data	Function
00	Normal
01	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera+VTR power ON

* For page D and F, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that in this case, the test mode will not be released even if the main power has been turned off (8.4 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander. And set data: 00 to page: 0, address: 01.

2. Emergency Memory Address

Page F	Address 10 to 1B

Address	Contents
10	1st EMG code
12	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
13	Lower: Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
17	Lower: Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
1B	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency.

The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency. Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses 10 to 1B to 00 after repairs/adjustments.

Note 2: When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

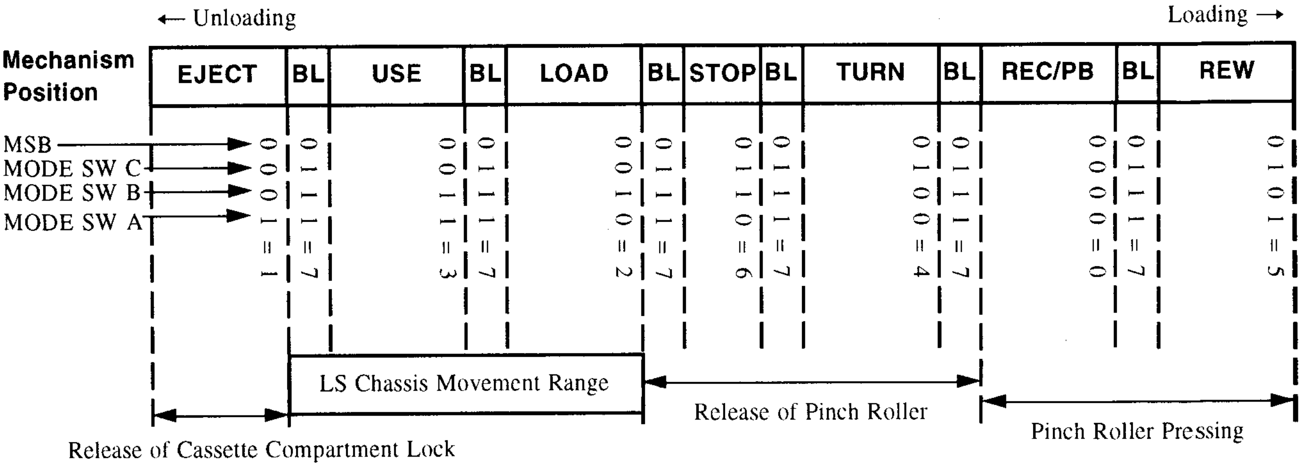
2-1. EMG CODE (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW Codes

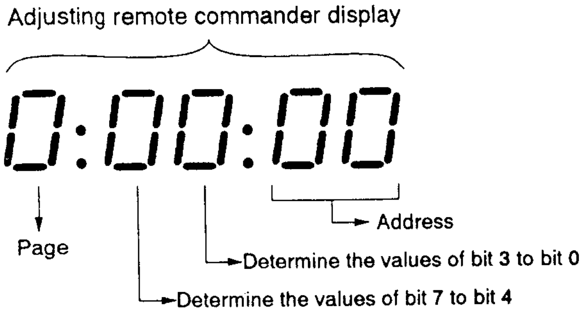
- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.


← Unloading
Loading →
Mechanism Position
EJECT
BL
USE
BL
LOAD
BL
STOP
BL
TURN
BL
REC/PB
BL
REW
MSB
MODE SW C
MODE SW B
MODE SW A
0001 = 1
0111 = 7
0011 = 3
0111 = 7
0010 = 2
0111 = 7
0110 = 6
0111 = 7
0100 = 4
0111 = 7
0000 = 0
0111 = 7
0101 = 5
LS Chassis Movement Range
Release of Pinch Roller
Pinch Roller Pressing
Release of Cassette Compartment Lock

Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
RECP/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

	Remote controller display	Bit value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ→	E (E)	1	1	1	0
	F (F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

4. Input/output selection check

Page 3	Address 16

Bit	Function	When bit value = 1	When bit value = 0
0	Not S video terminal input		S video terminal input
1	Not video terminal input		Video terminal input
2	Audio terminal monaural	Monaural	
3			
4			
5			
6			
7			

Using method:

1) Select address: 16 of page: 3.
2) By discriminating the bit value of the display data, the state of the input/output selection can be discriminated.

5. Condensation, head clogging check

Page 3	Address 17

Bit	Function	When bit value = 1	When bit value = 0
0	Condensation state (1 hour preservation)	Condensation	
1	Head clogging	Head clogging	
2			
3			
4			
5			
6			
7			

Using method:
1) Select address: 17 of page: 3.
2) By discriminating the bit value of the display data, the state of the VTR can be discriminated.

6. VTR state check (1)

Page 3	Address 18

Bit	Function	When bit value = 1	When bit value = 0
0	Video/audio circuit PB mode	PB mode	REC/E-E mode
1			
2			
3			
4	Head clog detection when REC	Head clog	
5			
6	Recorded tape playback	Playback	
7	Capstan rotation	Rotation	

Using method:
1) Select address: 18 of page: 3.
2) By discriminating the bit value of the display data, the state of the VTR can be discriminated.

7. VTR state check (2)

Page 3	Address 19

Bit	Function	When bit value = 1	When bit value = 0
0	Eject state	Eject state	
1	Cassette insertion state	Cassette in	
2	Cassette accidental erasure prevention	Accidental erasure prevention state	
3	Tape type	ME	MP
4	Tape type	Hi8 MP	NORMAL MP, ME
5	Crystal variable speed playback	Variable speed playback	
6	Variable speed playback mode	Variable speed playback mode	
7	DRUM	DRUM rotation	Stop

Using method:
1) Select address: 19 of page: 3.
2) By discriminating the bit value of the display data, the state of the VTR can be discriminated.

8. VTR state check (3)

Page 3	Address 1A

Bit	Function	When bit value = 1	When bit value = 0
0	Playback tape recording mode	Hi8	Standard 8
1			
2	Audio mode	Monaural	Stereo
3			
4			
5			
6			
7			

Using method:

1) Select address: 1A of page: 3.
2) By discriminating the bit value of the display data, the state of the VTR can be discriminated.

9. Record of Use Check

Page 3	Address E0 to E9

Address	Function		Remarks
E0	Service status		For checking reset. Normal = "FF". Reset: "00"
E1	Drum rotation counted time (BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
E2		Hour (L)	10th place digit and 1st place digit of counted time (decimal digital)
E3		Minute	
E4	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
E5		Month	
E6		Day	
E7	Final condensation occurrence date (BCD code)	Year	
E8		Month	
E9		Day	

Using method:

1) The record of use data is displayed at addresses: E0 to E9 of page 3.

Note: This data will be erased when the coin lithium battery is removed (reset).

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Initialization of D, E, F Page Data

If the D, E, F page data is erased due to some reason, perform "1-2. INITIALIZATION OF D, E, F PAGE DATA", of "5-1. CAMERA SECTION ADJUSTMENTS".

2. Battery End Adjustment (VC-190 board)

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten. The image at the battery end will also be rough.

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote commander
Measuring Instrument	
Adjustment Page	D
Specified Value	28 to 2C, 35

Note: The lens block and cabinet (R) must be connected.

Switch setting
1) AUTO FOCUS switch .... OFF
2) VF PW-SAVE (Menu display) .... OFF
(Color EVF model)

Connection:
1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-3-5.

Adjusting method:
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.1 ± 0.1 Vdc.
2) Turn off the regulated power supply.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Turn on the regulated power supply.
5) Load a cassette, and set to the camera recording mode.
6) Set data: 01 to page: 0, address: 01.
7) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.30 ± 0.01 Vdc.
8) Select page: 3, address: 15, read the adjusting remote commander display data, and this data is named Dref.
9) Set data Dref to page: D, address: 28, and press the PAUSE button of the adjusting remote commander.
10) Set the Dref to page: D, address: 35, and press the PAUSE button of the adjusting remote commander.
11) Convert Dref to decimal notation, and obtain Dref′. (Refer to Table 5-1-5. "Hexadecimal notation – decimal notation conversion table")
12) Calculate D29′, D2A′, D2B′ and D2C′ using following equations (decimal notation calculation).
D29′ = Dref′+8
D2A′ = Dref′+32
D2B′ = Dref′+53
D2C′ = Dref′+64
13) Convert D29′, D2A′, D2B′ and D2C′ to hexadecimal notation, and obtain D29, D2A, D2B and D2C.
14) Set data: D29 to page: D, address: 29, and press the PAUSE button of the adjusting remote commander.
15) Set data: D2A to page: D, address: 2A, and press the PAUSE button.
16) Set data: D2B to page: D, address: 2B, and press the PAUSE button.
17) Set data: D2C to page: D, address: 2C, and press the PAUSE button.
18) Set data: 00 to page: 0, address: 01.

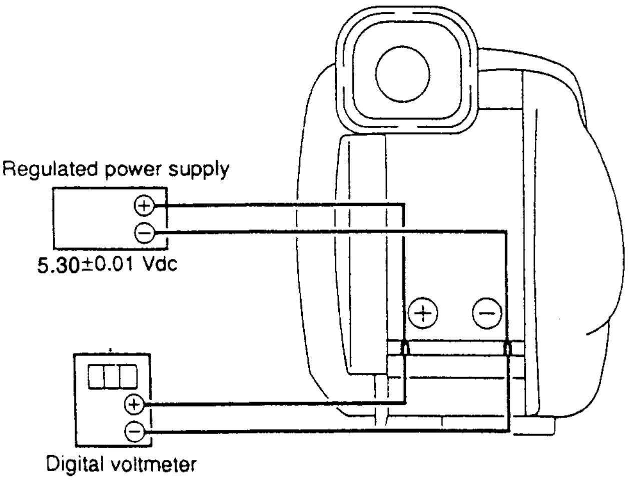


Fig. 5-3-5.

3-3. SERVO SYSTEM ADJUSTMENTS

1. CAP FG Offset Adjustment (VC-190 board)

Improve the capstan servo characteristic. If it is not correct, jitters will increase.

Mode	Playback (SP mode)
Signal	Alignment tape: For operation check (WR5-5NSP (NTSC)) (WR5-5CSP (PAL))
Measurement Point	Pin ④ of CN207 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	3A
Specified Value	Duty = 50 ± 1.5%

Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 81 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Check that the data of page: 2, address: 02 is 01.
4) Check that Duty of CAP FG signal satisfies the specified value. If not, set data: 00 to page: 2, address: 01, and press the PAUSE button, and then, repeat steps 2) to 4).
5) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

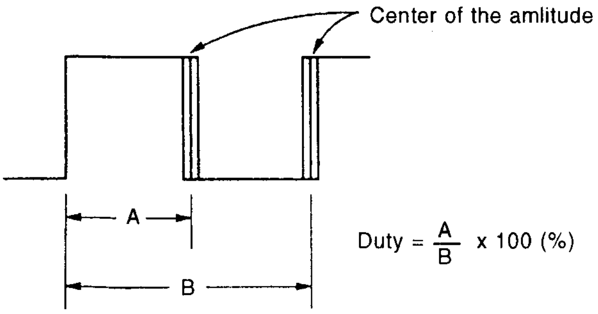


Fig. 5-3-6.

2. Switching Position Adjustment (VC-190 board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP (NTSC)) (WR5-1CP (PAL))
Measurement Point	CH1: Pin ③ of CN207 (RF SWP) CH2: Pin ⑥ of CN207 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	36, 37
Specified Value	t1 = 0 ± 10 µsec

Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Change the data of page: F, address: 37 and minimize "t1", and press the PAUSE button of the adjusting remote commander. (Coarse adjustment)
3) Change the data of page: F, address: 36, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 0, address: 01.

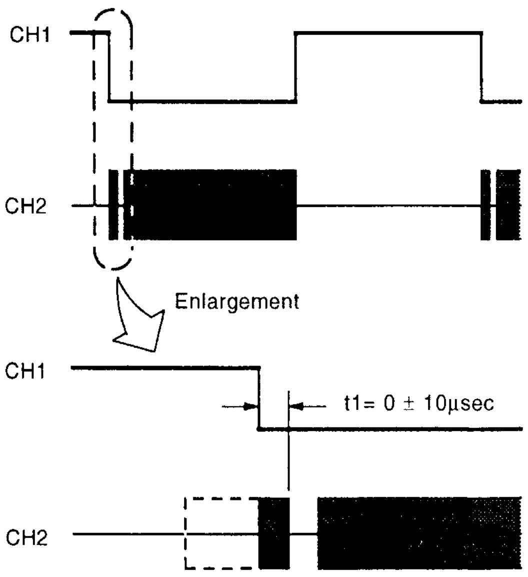


Fig. 5-3-7.

3. NTSC LP mode Switching Position Adjustment (VC-190 board) (CCD-TR930)

If deviated in this case causes switching noise or jitter on the LP mode played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP)
Measurement Point	CH1: Pin ③ of CN207 (RF SWP) CH2: Pin ⑥ of CN207 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	38, 39
Specified Value	t1 = 0 ± 10 µsec

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 40 to page: F, address: 29, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 39 and minimize "t1", and press the PAUSE button of the adjusting remote commander. (Coarse adjustment)
4) Change the data of page: F, address: 38, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: F, address: 29, and press the PAUSE button of the adjusting remote commander.
7) Set data: 00 to page: 0, address: 01.

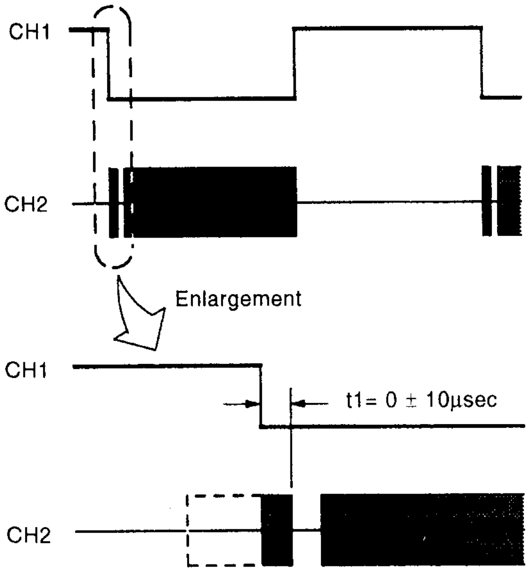


Fig. 5-3-8.

3-4. VIDEO SYSTEM ADJUSTMENTS

Video system adjustments must be performed in the following order.

[Adjusting Order]

1. 28 MHz origin oscillation adjustment
2. Filter fo adjustment
3. Y OUT level adjustment
4. C OUT level adjustment
5. RP filter fo adjustment
6. AFC f0 adjustment
7. NTSC REC Y current adjustment
8. PAL REC Y current adjustment
9. NTSC REC L level adjustment
10. PAL Hi8 REC L level adjustment
11. REC C current adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-190 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop
Subject	Arbitrary
Measurement Point	Pin ⑫ of IC202 or Pin ⑯ of IC203
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	3B
Specified Value	f = 14318181 ± 71 Hz (NTSC) f = 14187500 ± 70 Hz (PAL)

Note 1: If the x2 frequency is displayed, insert a 1 kΩ resistor between the measuring point and probe.
Note 2: NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 3B, and set the oscillation frequency (f) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

2. Filter fo Adjustment (VC-190 board)

Minimize the chroma signal residual components during composite video signal input.

Mode	VTR stop
Signal	Color bar (Video input)
Measurement Point	Pin ⑨ of CN207 (EZ I/O)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	5A
Specified Value	Minimum residual chroma signal components

Note 1: Do not insert a plug into the S video terminal.
Note 2: NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 33 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 5A, and minimize the residual chroma signal components (A).
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

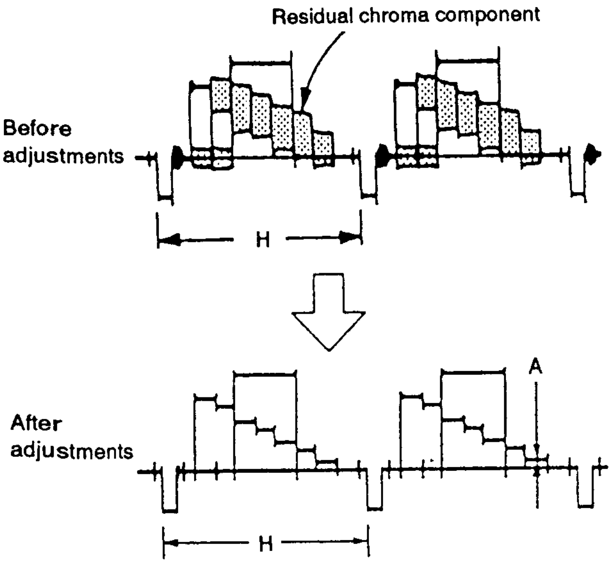


Fig. 5-3-9.

3. Y OUT Level Adjustment (VC-190 board)

Set the Y signal output level.

Mode	VTR stop
Subject	Arbitrary
Measurement Point	Y signal terminal of S VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	56
Specified Value	A = 286 ± 5 mV (NTSC) A = 300 ± 5 mV (PAL)

Note 1: Insert the plug into the S video terminal.
Note 2: NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 56, and set the SYNC level (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

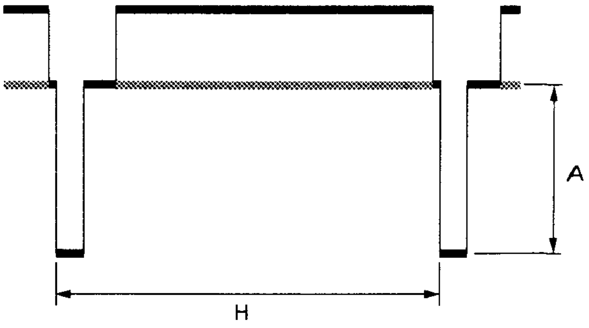


Fig. 5-3-10.

4. C OUT Level Adjustment (VC-190 board)

Set the chroma signal output level.

Mode	VTR stop
Subject	Arbitrary
Measurement Point	Chroma signal terminal of S VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	58
Specified Value	A = 286 ± 5 mV (NTSC) A = 300 ± 5 mV (PAL)

Note 1: Insert the plug into the S video terminal.

Note 2: NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 58, and set the burst level (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

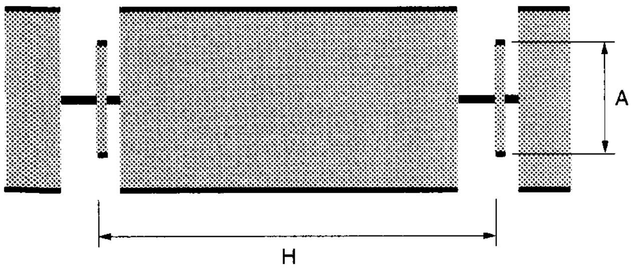


Fig. 5-3-11.

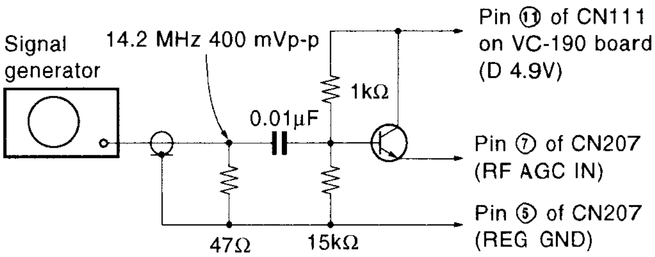
5. RP Filter fo Adjustment (VC-190 board)

Adjust the LPF of the playback RF amplifier.

Mode	VTR stop
Subject	Arbitrary
Measurement Point	Pin ⑮ of CN207 (RF AGC OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	5B
Specified Value	A = Below 10 mVp-p

Connection:

1) Input a 14.2 MHz, 400 mVp-p CW signal to Pin ⑦ of CN207 (RF AGC IN).



Transistor : General NPN transistor (2SC403, etc)

47Ω resistor :	1-249-401-11
1kΩ resistor :	1-249-417-11
15kΩ resistor :	1-249-431-11
0.01μF capacitor :	1-101-004-00

Fig. 5-3-12.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 35 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 5B, and minimize the 14.2 MHz signal level (A).
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

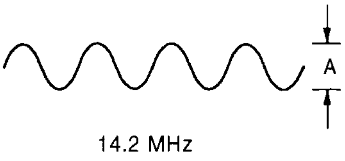


Fig. 5-3-13.

6. AFC fo Adjustment (VC-190 board)

Adjust the pull-in range of the A/D converted clock generator during playback.

Mode	VTR stop
Signal	Color bar (Video input)
Measurement Point	Pin ⑯ of CN207 (AFC fo)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	57
Specified Value	A = 2.2 ± 0.05 Vdc

Note: Do not insert the plug in the S video terminal.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 31 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 57, and set the DC voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

7. NTSC REC Y Current Adjustment (VC-190 board) (CCD-TR930)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment page	F
Adjustment address	60, 61, 62, 63
Specified value	A = 140 ± 5 mV

Adjusting method:

1) Insert a tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
3) Note down the data of page: F, address: 69, set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Change the data of page: F, address: 61, and set the REC Y signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Read the data (D_{61}) of page: F, address: 61.
8) Convert D_{61} to a decimal number, to obtain D_{61} .
   (Refer to Table 5-1-5. Hexadecimal-Decimal conversion Table.)
11) Calculate the adjustment data (decimal) from the following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.
   Address: 60 $D_{60}' = D_{61}'$
   Address: 62 $D_{62}' = D_{61}' + 13$
   Address: 63 $D_{63}' = D_{61}' + 13$
   Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.
12) After setting data noted down at step 3) for page: F, address: 69, press the PAUSE button of the adjusting remote commander.
13) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
14) Set data: 00 to page: 0, address: 01.

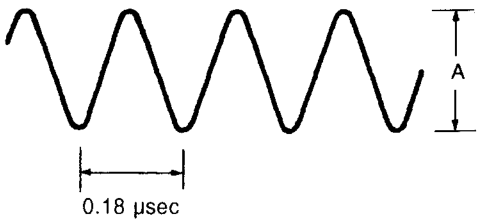


Fig. 5-3-14.

8. PAL REC Y Current Adjustment (VC-190 board) (CCD-TR820E/TR825E/TR920E)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment page	F
Adjustment address	60, 61, 62, 63
Specified value	A = 185 ± 5 mV

Adjusting method:

1) Insert a tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
3) Note down the data of page: F, address: 69, set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Change the data of page: F, address: 61, and set the REC Y signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Read the data (D_{61}) of page: F, address: 61.
8) Set D_{61} to address: 60, 62 and 63 of page: F.
   Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.
9) After setting data noted down at step 3) for page: F, address: 69, press the PAUSE button of the adjusting remote commander.
10) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
11) Set data: 00 to page: 0, address: 01.

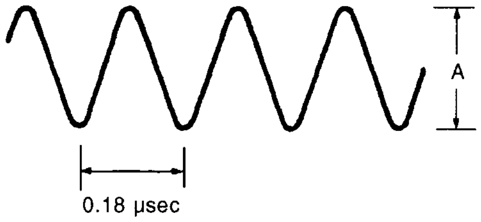


Fig. 5-3-15.

9. NTSC REC L Level Adjustment (VC-190 board) (CCD-TR930)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	68 to 6F
Specified value	A = 8.4 ± 0.4 mV

Note: Do not insert a plug into the AUDIO (R) terminal.

Connection:

1) Remove C1060 (0.01μF , near Pin ⑤ of IC101).
Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C1060 with new parts (1-162-970-11 CERAMIC CHIP 0.01μF 10% 25V).
2) Connect Pin (63) of IC101 and GND with a 0.01μF capacitor.
   0.01μF capacitor: 1-101-004-00

Adjusting method:

1) Insert a Hi8 ME tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
3) Set data: FF to page: F, address: 68, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: F, address: 69, and set the REC AFM signal level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Read the data (D_{69}) of page: F, address: 69.
7) Convert D_{69} to a decimal number, to obtain D_{69}'.
   (Refer to Table 5-1-5. Hexadecimal-Decimal conversion Table.)
8) Calculate the adjustment data (decimal) from the following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.
   Address: 68 $D_{68}' = D_{69}'$
   Address: 6A $D_{6A}' = D_{69}' - 11$
   Address: 6B $D_{6A}' = D_{69}' - 11$
   Address: 6C $D_{6C}' = D_{69}' + 16$
   Address: 6D $D_{6D}' = D_{69}' + 16$
   Address: 6E $D_{6E}' = D_{69}' + 16$
   Address: 6F $D_{6F}' = D_{69}' + 16$
   Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.
9) Set data: 00 to page: 0, address: 01.
10) Perform "REC C Current Adjustment".

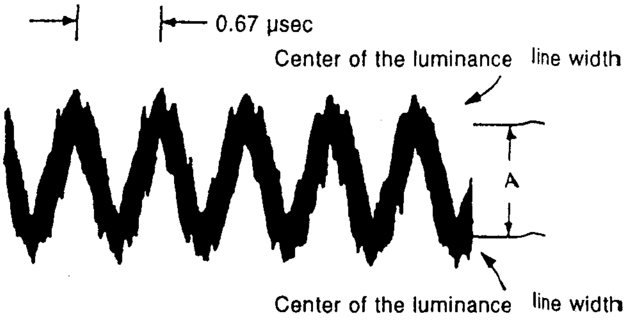

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 5-3-16.

10. PAL REC L Level Adjustment (VC-190 board) (CCD-TR820E/TR825E/TR920E)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	68 to 6F
Specified value	A = 9.8 ± 0.4 mV

Note: Do not insert a plug into the AUDIO (R) terminal.

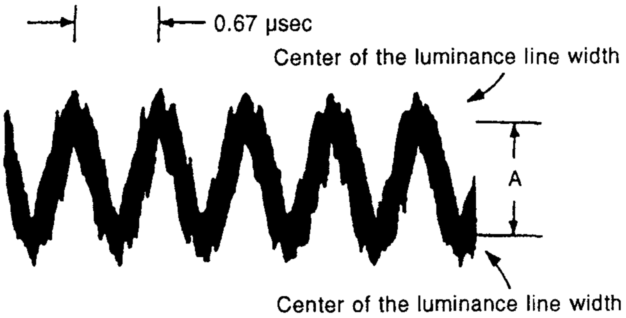


Fig. 5-3-17.

Connection:

1) Remove C1060 (0.01μF , near Pin ⑤ of IC101).
   Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C1060 with new parts (1-162-970-11 CERAMIC CHIP 0.01μF 10% 25V).
2) Connect Pin (63) of IC101 and GND with a 0.01μF capacitor.
   0.01μF capacitor: 1-101-004-00

Adjusting method:

1) Insert a Hi8 ME tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
3) Set data: FF to page: F, address: 68, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: F, address: 69, and set the REC AFM signal level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Read the data (D69) of page: F, address: 69.
7) Convert D69 to a decimal number, to obtain D69′.
   (Refer to Table 5-1-5. Hexadecimal-Decimal conversion Table.)
8) Calculate the adjustment data (decimal) from the following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.
   Address: 68 D68′ = D69′
   Address: 6A D6A′ = D69′
   Address: 6B D6B′ = D69′
   Address: 6C D6C′ = D69′ + 11
   Address: 6D D6D′ = D69′ + 11
   Address: 6E D6E′ = D69′ + 11
   Address: 6F D6F′ = D69′ + 11
   Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.
9) Set data: 00 to page: 0, address: 01.
10) Perform "REC C Current Adjustment".

11. REC C Current Adjustment (VC-190 board)

Set the recording current level of REC Chroma signal. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	72
Specified value	A = 30.3 ± 1.1 mV (NTSC) A = 33.7 ± 1.2 mV (PAL)

Note: NTSC model: CCD-TR930
PAL model: CCD-TR820E/TR825E/TR920E

Connection:

1) Remove C1060 (0.01µF , near Pin ⑤ of IC101).
   Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C1060 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).
2) Connect Pin ① of IC101 and GND with a 0.01µF capacitor.
   0.01µF capacitor: 1-101-004-00
3) Connect Pin (63) of IC101 and GND with a 0.01µF capacitor.
   0.01µF capacitor: 1-101-004-00

Adjusting method:

1) Insert a tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
2) Set data: 30 to page: 2, address: 61, and press the PAUSE button of the adjusting remote commander.
3) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Change the data of page: F, address: 72, and set the REC chroma signal level (A) to the specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
9) Set data: 00 to page: 2, address: 61, and press the PAUSE button of the adjusting remote commander.
10) Set data: 00 to page: 0, address: 01.

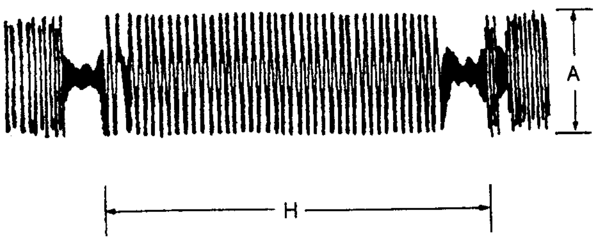


Fig. 5-3-18.

3-5. IR TRANSMITTER ADJUSTMENTS (CCD-TR930)

Adjust using a IR receiver jig (J-6082-383-A).

Switch setting:
LASER LINK..ON (Red LED is lit)

1. IR Video Carrier Frequency Adjustment (MI-29 board)

Mode	Camera standby
Subject	Arbitrary
Measuring point	TP607 of IR receiver jig (Or Pin ⑯ of IC361 of MI-29 board)
Measuring instrument	Frequency counter
Adjusting page	F
Adjusting address	76
Specified value	f = 11.85 ± 0.05 MHz

Connection of Equipment
Connect the measuring devices as shown in the following figure, and adjust.

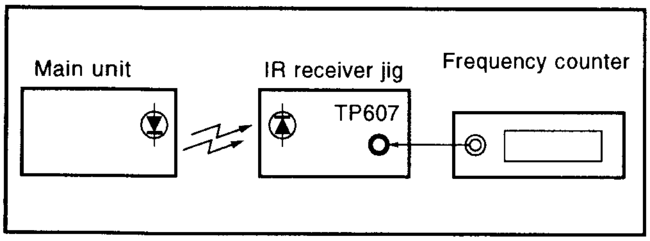


Fig. 5-3-19.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 37 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 76, and set the video carrier frequency (f) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

MI-29 BOARD (SIDE B) **MI-29 BOARD (SIDE A)**

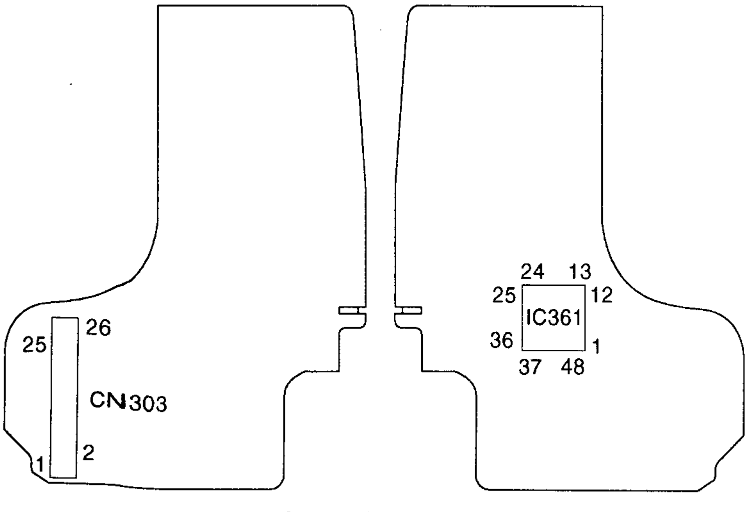


Fig. 5-3-20.

2. IR Video Deviation Adjustment (MI-29 Board)

Mode	Camera standby
Subject	Arbitrary
Measuring point	VIDEO OUT terminal of IR receiver jig (Terminated at 75Ω)
Measuring instrument	Oscilloscope
Adjusting page	F
Adjusting address	73
Specified value	A = 0.87 ± 0.04V

Connection of Equipment
Connect the measuring devices as shown in the following figure, and adjust.

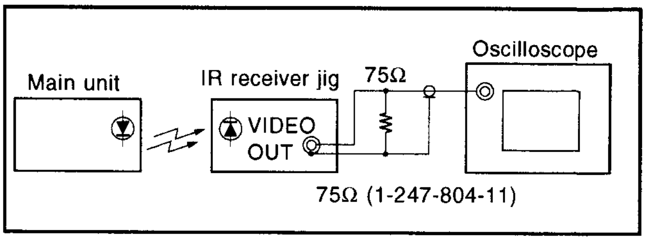


Fig. 5-3-21.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 39 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 73, and set the video signal amplitude (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

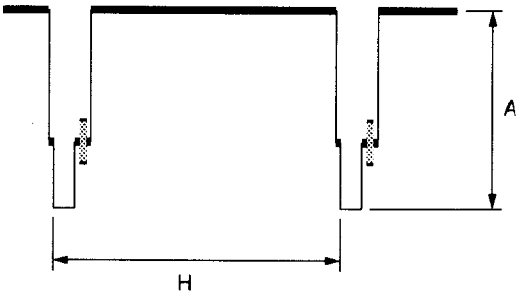


Fig. 5-3-22.

3. IR Audio Deviation Adjustment (MI-29 Board)

Mode	VTR recording
Signal	Audio signal: 400 Hz, –7.5 dBs: Left or right of audio input/output terminal Video signal: Color bar signal: Video input/ output terminal
Measuring point	AUDIO OUT L terminal and AUDIO OUT R terminal of IR receiver jig (Terminated at 47 kΩ)
Measuring instrument	Audio level meter
Adjusting page	F
Adjusting address	75
Specified value	–7.5 ± 0.5 dBs

Connection of Equipment
Connect the measuring devices as shown in the following figure, and adjust.

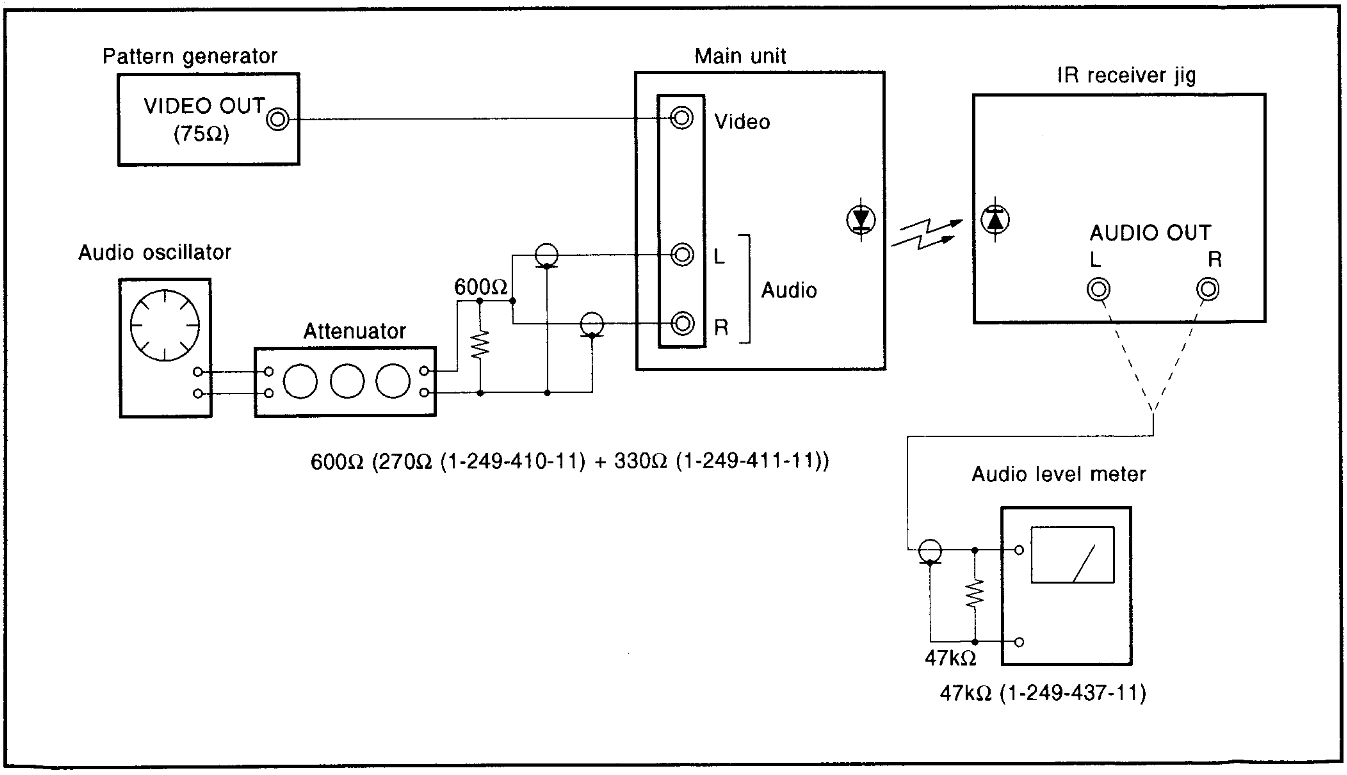

Pattern generator
VIDEO OUT
(75Ω)
Main unit
Video
L
R
Audio
IR receiver jig
AUDIO OUT
L
R
Audio oscillator
600Ω
Attenuator
600Ω (270Ω (1-249-410-11) + 330Ω (1-249-411-11))
Audio level meter
47kΩ
47kΩ (1-249-437-11)

Fig. 5-3-23.

Adjusting method:
1) Set data: 01 to page: 0, address: 01.
2) Connect the audio level meter to the AUDIO OUT L terminal of the IR receiver jig.
3) Change the data of page: F, address: 75, and set the audio signal level to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Connect the audio level meter to the AUDIO OUT R terminal of the IR receiver jig.
6) Check that the audio level is within the specified value. If outside, repeat from step 2.
7) Set data: 00 to page: 0, address: 01.

3-6. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal.
- The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.
- Set the Hi-Fi sound switch in the menu display to "STEREO" position unless specified otherwise.

Note:

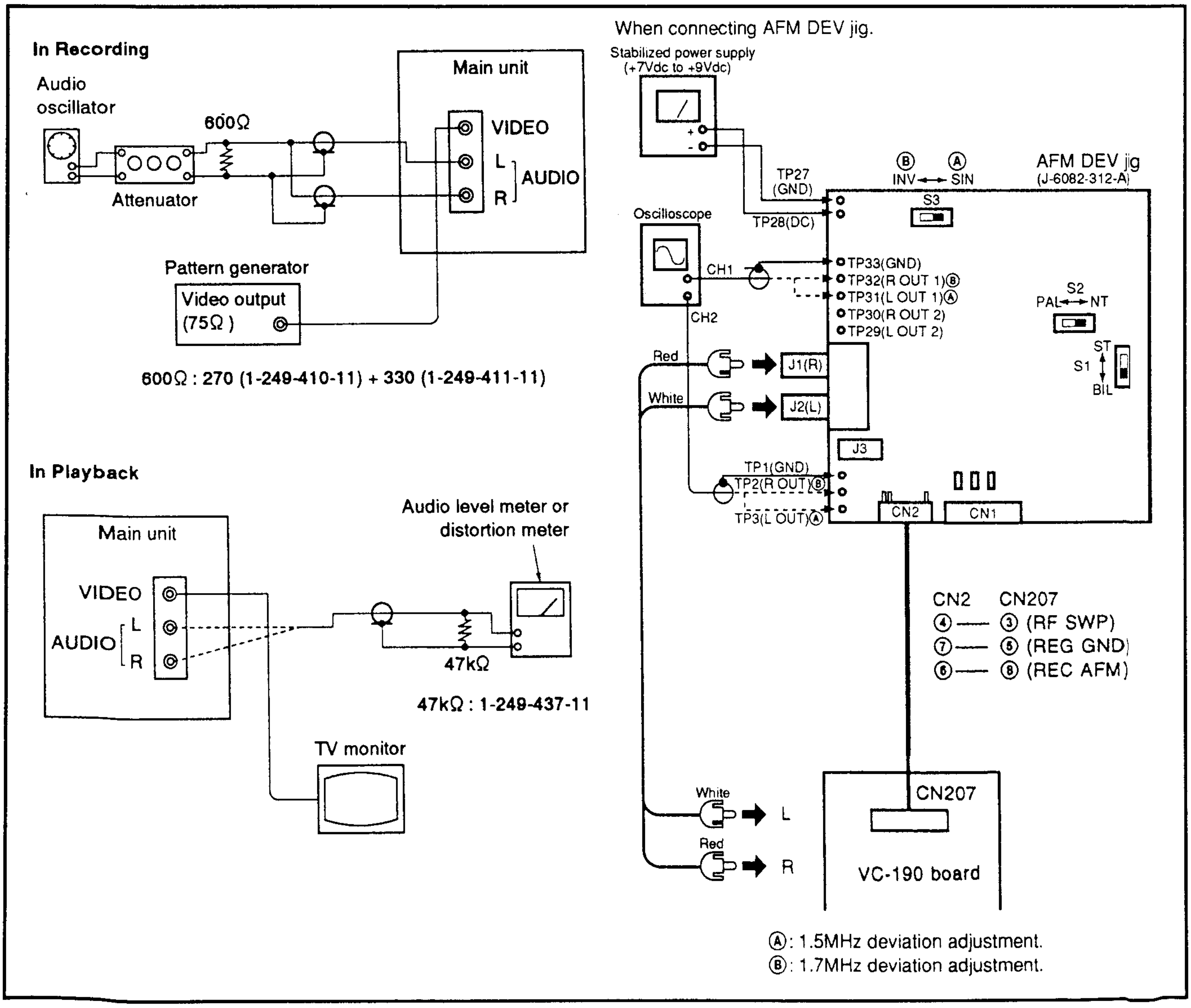
1) When inputting the audio signal, input the same signal to both the L and R channels, unless specified otherwise.
2) Be sure to insert the plug (Shorting plug or dummy plug, etc) into the AUDIO terminal (Right). If the plug is not inserted, the monaural mode well be set, and correct adjustments can not be carried out.
   [Monaural mode]
   During recording .... REC AFM RF 1.7MHz carriear will not be output.
   During playback .... The L+R signal will be output from the AUDIO terminal (Left).

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 5-3-23, and perform adjustments at the power switch [VTR] or [PLAYER] position.

[Adjustment Procedure]

1) 1.5 MHz deviation adjustment
2) 1.7 MHz deviation adjustment
3) BPF adjustment


In Recording
Audio oscillator
600Ω
Attenuator
Main unit
VIDEO
L
AUDIO
R
Pattern generator
Video output (75Ω)
600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)
In Playback
Main unit
VIDEO
AUDIO L R
Audio level meter or distortion meter
47kΩ
47kΩ : 1-249-437-11
TV monitor
When connecting AFM DEV jig.
Stabilized power supply (+7Vdc to +9Vdc)
+
-
TP27 (GND)
TP28(DC)
Ⓑ Ⓐ
INV ↔ SIN
S3
AFM DEV jig (J-6082-312-A)
Oscilloscope
CH1
CH2
TP33(GND)
TP32(R OUT 1)Ⓑ
TP31(L OUT 1)Ⓐ
TP30(R OUT 2)
TP29(L OUT 2)
S2
PAL ↔ NT
S1
ST
BIL
Red
White
J1(R)
J2(L)
J3
TP1(GND)
TP2(R OUT)Ⓑ
TP3(L OUT)Ⓐ
CN2
CN1
CN2 CN207
④— ③ (RF SWP)
⑦— ⑥ (REG GND)
⑥— ⑧ (REC AFM)
White
L
Red
R
CN207
VC-190 board

Ⓐ: 1.5MHz deviation adjustment.
Ⓑ: 1.7MHz deviation adjustment.

Fig. 5-3-24.

1. 1.5 MHz Deviation Adjustment (VC-190 board)

Sets the spectrum of the L-ch (L+R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals (Note 1)
Measuring point	CH1: AFM DEV jig TP31 CH2: AFM DEV jig TP3
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	F
Adjustment address	52
Specified value	The difference between CH1 signal and CH2 signal should be minimum.

Connection:

1) Connect CN2 of the AFM DEV jig to CN207 of the VC-190 board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 Vdc to +9 Vdc).
4) Set the AFM DEV jig switches to the following positions.
   S1 ....BIL position
   S2 ....NT position (NTSC)
   PAL position (PAL)
   S3 ....SIN position

Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjustment method:

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data: 01 to page: 0, address: 01.
4) Change the data of page: F, address: 52 and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

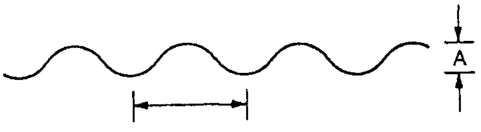


Fig. 5-3-25.

2. 1.7 MHz Deviation Adjustment (VC-190 board)

Sets the spectrum of the R-ch (L–R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals
Measuring point	CH1: AFM DEV jig TP32 CH2: AFM DEV jig TP2
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	F
Adjustment address	53
Specified value	The difference between CH1 signal and CH2 signal should be minimum.

Connection:

1) Connect CN2 of the AFM DEV jig to CN207 of the VC-190 board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 to +9 Vdc).
4) Set the AFM DEV jig switches to the following positions.
   S1 ....BIL position
   S2 ....NT position (NTSC)
   PAL position (PAL)
   S3 ....INV position

Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjustment method:

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data: 01 to page: 0, address: 01.
4) Change the data of page: F, address: 53 and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

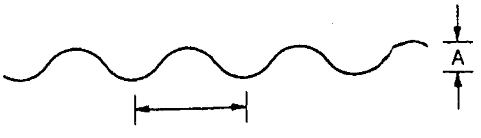


Fig. 5-3-26.

3. BPF f_0 Adjustment (VC-190 board)

Sets the BPF passing frequency so that the AFM signal can separate from the playback RF signal properly. If deviated. the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback.

Mode	Playback
Signal Measuring point	Alignment tape: For BPF adjustment (WR5-11NS (NTSC)) (WR5-11CS (PAL))
Measuring device	Right or left audio output terminal
Adjustment page	Distortion meter
Adjustment address	F
	54
Specified value	The Main and Sub channel distortion rates should be almost the same (within ± 1%) and minimum

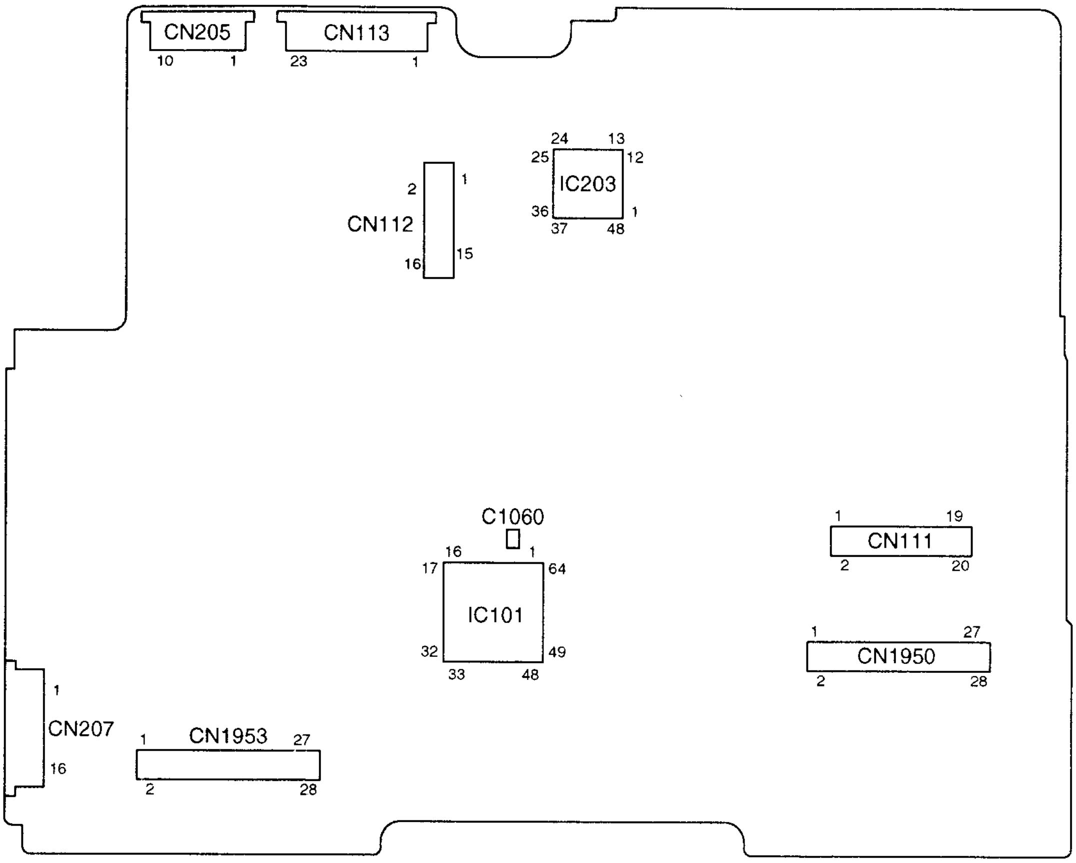
Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjustment method:

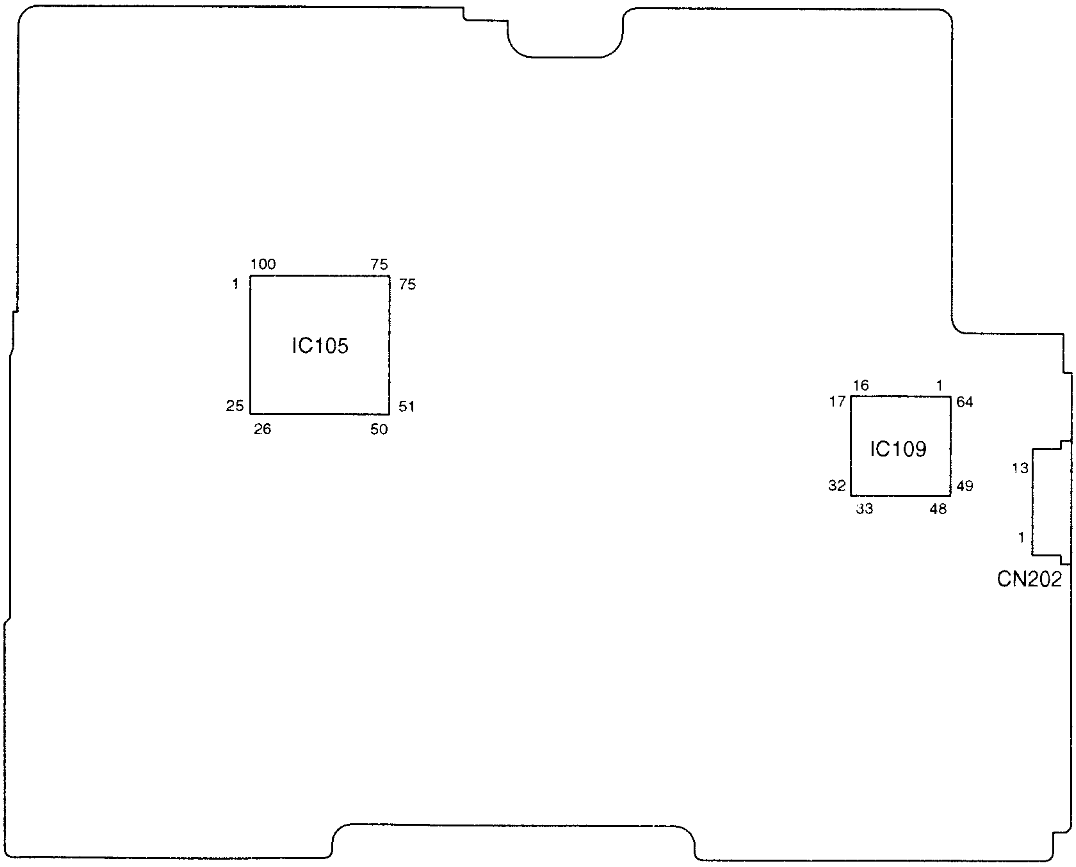
1) Set data: 01 to page: 0, address: 01.
2) Set the Hi-Fi sound switch (menu display) to " $\boxed{2}$ ".
3) Change the data of page: F, address: 54 and minimize the distortion rate.
4) Press the PAUSE button of the adjusting remote commander.
5) Set the Hi-Fi sound switch to " $\boxed{1}$ ".
6) Change the data of page: F, address: 54 and minimize the distortion rate.
7) Press the PAUSE button of the adjusting remote commander.
8) Repeat steps 2) to 7) and set the data of address: 54 so that the distortions rates when the Hi-Fi sound switch is set to " $\boxed{2}$ " and set to " $\boxed{1}$ " respectively are almost the same and minimum.
9) Press the PAUSE button of the adjusting remote commander.
10) Set data: 00 to page: 0, address: 01.
11) Set the Hi-Fi sound switch to "STEREO".

3-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

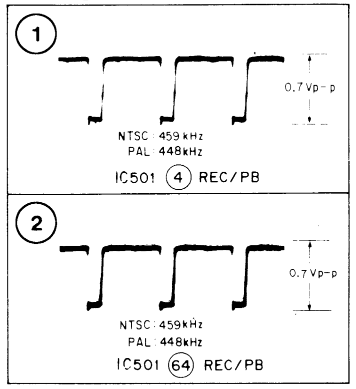
VC-190 BOARD (SIDE A)


CN205
10
1
CN113
23
1
IC203
24
13
25
12
36
1
37
48
CN112
2
1
16
15
C1060
IC101
16
1
17
64
32
49
33
48
CN111
1
19
2
20
CN1950
1
27
2
28
CN207
1
16
CN1953
1
27
2
28

VC-190 BOARD (SIDE B)


IC105
100
75
1
75
25
51
26
50
IC109
16
1
17
64
32
49
33
48
CN202
13
1

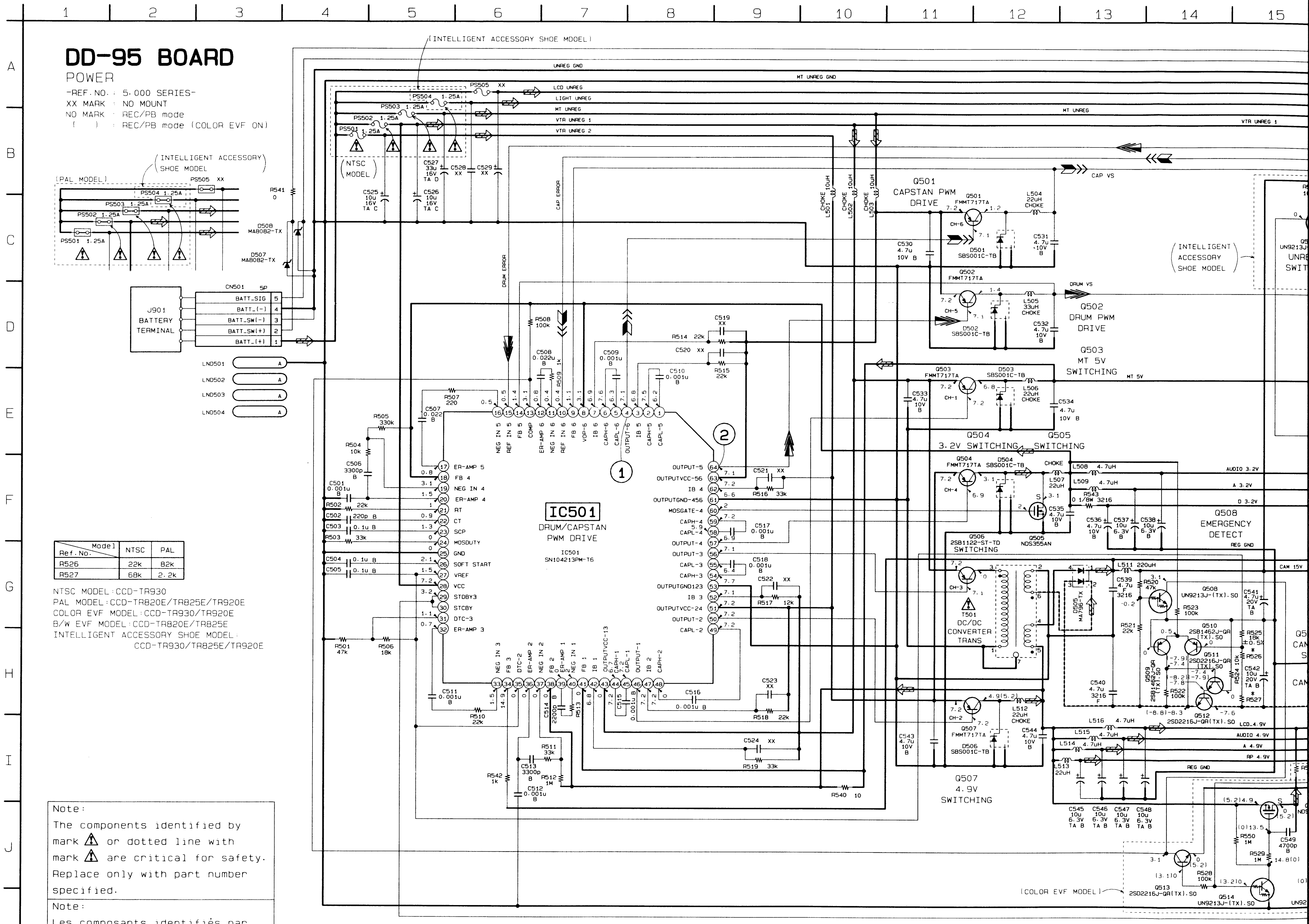
DD-95 BOARD



DD-95 BOARD

POWER

-REF. NO. : 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
( ) : REC/PB mode (COLOR EVF ON)



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
K
(INTELLIGENT ACCESSORY SHOE MODEL)
(PAL MODEL)
(NTSC MODEL)
PS501 1.25A
PS502 1.25A
PS503 1.25A
PS504 1.25A
PS505 XX
UNREG GND
LCD UNREG
LIGHT UNREG
MT UNREG
VTR UNREG 1
VTR UNREG 2
MT UNREG GND
J901 BATTERY TERMINAL
CN501 5P
BATT_SIG
BATT_(-)
BATT_SW(-)
BATT_SW(+)
BATT_(+)
LND501
LND502
LND503
LND504
D507 MA8082-TX
D508 MA8082-TX
R541 0
DRUM ERROR
CAP ERROR
IC501
DRUM/CAPSTAN PWM DRIVE
IC501 SN104213PM-T6
Q501 CAPSTAN PWM DRIVE
Q502 DRUM PWM DRIVE
Q503 MT 5V SWITCHING
Q504 3.2V SWITCHING
Q505 SWITCHING
Q506 2SB1122-ST-TD SWITCHING
Q505 NDS355AN
T501 DC/DC CONVERTER TRANS
Q507 4.9V SWITCHING
Q508 EMERGENCY DETECT
Q513 EVF SWITCH
Q514 EVF SWITCH
(INTELLIGENT ACCESSORY SHOE MODEL)
(COLOR EVF MODEL)
CAP VS
DRUM VS
MT 5V
AUDIO 3.2V
A 3.2V
D 3.2V
REG GND
CAM 15V
LCD 4.9V
AUDIO 4.9V
A 4.9V
RP 4.9V

Ref.No. \ Model	NTSC	PAL
R526	22k	82k
R527	68k	2.2k

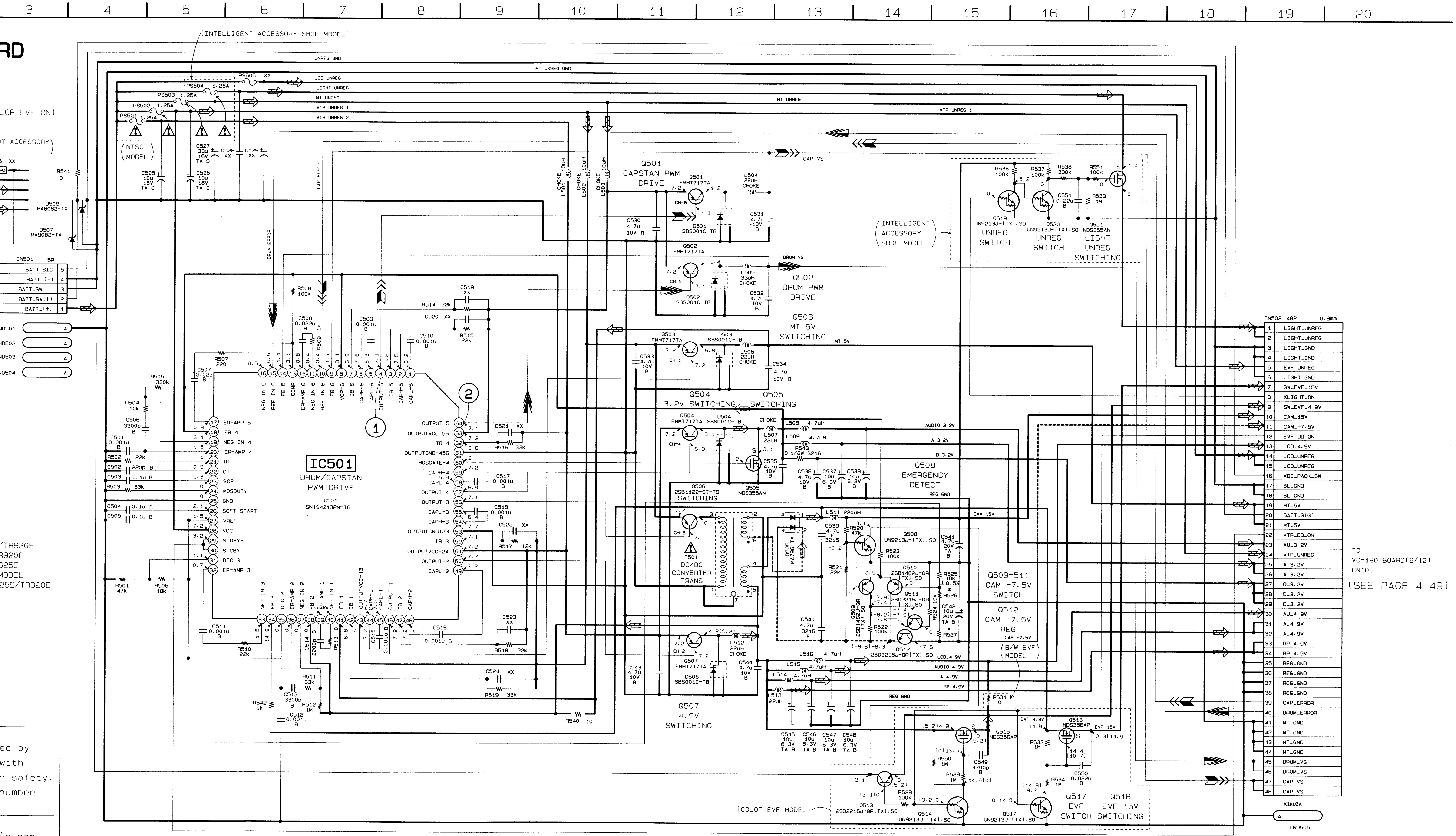
NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E
COLOR EVF MODEL : CCD-TR930/TR920E
B/W EVF MODEL : CCD-TR820E/TR825E
INTELLIGENT ACCESSORY SHOE MODEL : CCD-TR930/TR825E/TR920E

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

• SIGNAL PATH

	REC	REC/PB	PB
Drum servo(speed and phase)		⇛	
Capstan servo(speed and phase)		⇛»	


3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
RD
(INTELLIGENT ACCESSORY SHOE MODEL)
LOR EVF ON)
T ACCESSORY)
UNREG GND
MT UNREG GND
LCD UNREG
LIGHT UNREG
MT UNREG
VTR UNREG 1
VTR UNREG 2
PS505 XX
PS504 1.25A
PS503 1.25A
PS502 1.25A
PS501 1.25A
(NTSC MODEL)
R541 0
D508 MA8082-TX
D507 MA8082-TX
CN501 5P
BATT_SIG
BATT_(-)
BATT_SW(-)
BATT_SW(+)
BATT_(+)
LND501
LND502
LND503
LND504
CAP ERROR
DRUM ERROR
CAP VS
DRUM VS
Q501 CAPSTAN PWM DRIVE
Q502 DRUM PWM DRIVE
Q503 MT 5V SWITCHING
Q504 3.2V SWITCHING
Q505 SWITCHING
Q506 2SB1122-ST-TD SWITCHING
Q507 4.9V SWITCHING
Q508 EMERGENCY DETECT
Q509-511 CAM -7.5V SWITCH
Q512 CAM -7.5V REG
T501 DC/DC CONVERTER TRANS
IC501 DRUM/CAPSTAN PWM DRIVE
IC501 SN104213PM-T6
(INTELLIGENT ACCESSORY SHOE MODEL)
Q519 UNREG SWITCH
Q520 UNREG SWITCH
Q521 LIGHT UNREG SWITCHING
(B/W EVF MODEL)
(COLOR EVF MODEL)
Q513 EVF SWITCH
Q514 EVF SWITCH
Q515 EVF 4.9V SWITCHING
Q517 EVF SWITCH
Q518 EVF 15V SWITCHING
CN502 48P 0.8mm
LIGHT_UNREG
LIGHT_UNREG
LIGHT_GND
LIGHT_GND
EVF_UNREG
LIGHT_GND
SW_EVF_15V
XLIGHT_ON
SW_EVF_4.9V
CAM_15V
CAM_-7.5V
EVF_DD_ON
LCD_4.9V
LCD_UNREG
LCD_UNREG
XDC_PACK_SW
BL_GND
BL_GND
MT_5V
BATT_SIG
MT_5V
VTR_DD_ON
AU_3.2V
VTR_UNREG
A_3.2V
A_3.2V
D_3.2V
D_3.2V
D_3.2V
AU_4.9V
A_4.9V
A_4.9V
RP_4.9V
RP_4.9V
REG_GND
REG_GND
REG_GND
REG_GND
CAP_ERROR
DRUM_ERROR
MT_GND
MT_GND
MT_GND
MT_GND
DRUM_VS
DRUM_VS
CAP_VS
CAP_VS
KIKUZA
LND505
TO VC-190 BOARD(9/12) CN106
(SEE PAGE 4-49)
/TR920E
R920E
325E
MODEL
25E/TR920E

ed by
with
r safety.
number

és par
tiques
r une
spécifié.

• SIGNAL PATH

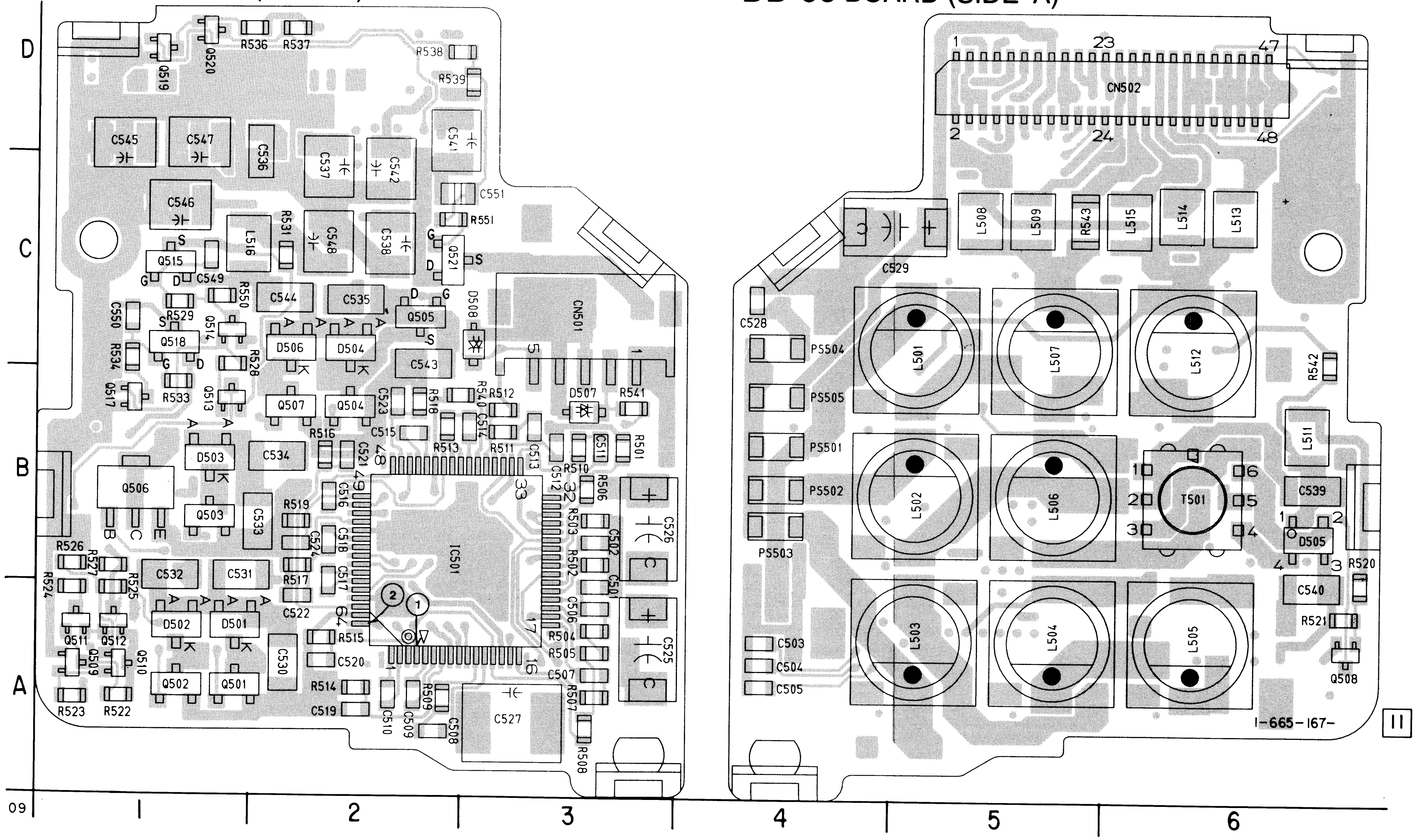
	REC	REC/PB	PB
Drum servo(speed and phase)		⇛	
Capstan servo(speed and phase)		⇒»	

DD-95 (POWER) PRINTED WIRING BOARD

– Ref No. DD-95 BOARD: 5,000 series –

DD-95 BOARD (SIDE B)

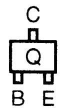
DD-95 BOARD (SIDE A)

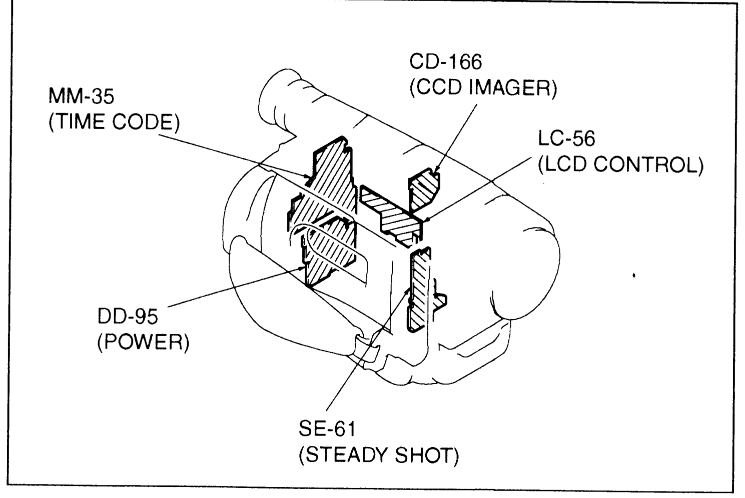

D
C
B
A
09
1
2
3
4
5
6
Q519
Q520
R536
R537
R538
R539
C545
C547
C536
C537
C542
C541
C546
C551
R551
R531
C548
C538
L516
Q515
Q521
C549
C550
R529
Q514
R550
C544
C535
Q505
D508
CN501
Q518
R534
R528
D506
D504
C543
Q517
R533
Q513
Q507
Q504
C523
R518
R540
R512
C514
D507
R541
R516
C515
R513
R511
C513
C511
R501
D503
C534
C521
R510
R506
Q506
Q503
C533
R519
C516
C524
C518
IC501
R503
R502
C502
C526
C501
R526
R527
R525
R524
C532
C531
R517
C517
C522
D502
D501
R515
C506
R504
R505
C525
Q511
Q512
Q509
Q510
C530
C520
C507
Q502
Q501
R514
C519
C510
C509
R509
C508
C527
R507
R508
R523
R522
CN502
L508
L509
R543
L515
L514
L513
C529
C528
PS504
PS505
PS501
PS502
PS503
L501
L507
L512
R542
L511
L502
L506
T501
C539
D505
R520
C540
R521
Q508
C503
C504
C505
L503
L504
L505
1-665-167-
11

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor




MM-35
(TIME CODE)
CD-166
(CCD IMAGER)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

DD-95 BOARD

C501	A-3
C502	B-3
C503	A-4
C504	A-4
C505	A-4
C506	A-3
C507	A-3
C508	A-2
C509	A-2
C510	A-2
C511	B-3
C512	B-3
C513	B-3
C514	B-3
C515	B-2
C516	B-2
C517	B-2
C518	B-2
C519	A-2
C520	A-2
C521	B-2
C522	A-2
C523	B-2
C524	B-2
C525	A-3
C526	B-3
C527	A-3
C528	C-4
C529	C-4
C530	A-2
C531	B-1
C532	B-1
C533	B-2
C534	B-2
C535	C-2
C536	C-2
C537	C-2
C538	C-2
C539	B-6
C540	B-6
C541	D-2
C542	C-2
C543	C-2
C544	C-2
C545	D-1
C546	C-1
C547	D-1
C548	C-2
C549	C-1
C550	C-1
C551	C-2
CN501	C-3
CN502	D-6
D501	A-1
D502	A-1
D503	B-1
D504	C-2
D505	B-6
D506	C-2
D507	B-3
D508	C-3
IC501	A-2
L501	C-5
L502	B-5
L503	A-5
L504	A-5
L505	A-6
L506	B-5
L507	C-5
L508	C-5
L509	C-5
L511	B-6
L512	C-6
L513	C-6
L514	C-6
L515	C-6
L516	C-1
PS501	B-4
PS502	B-4
PS503	B-4
PS504	C-4
PS505	B-4
Q501	A-1
Q502	A-1
Q503	B-1
Q504	B-2
Q505	C-2
Q506	B-1
Q507	B-2
Q508	A-6
Q509	A-1
Q510	A-1
Q511	A-1
Q512	A-1
Q513	B-1
Q514	C-1
Q515	C-1
Q517	B-1
Q518	C-1
Q519	D-1
Q520	D-1
Q521	C-2
R501	B-3
R502	B-3
R503	B-3
R504	A-3
R505	A-3
R506	B-3
R507	A-3
R508	A-3
R509	A-2
R510	B-3
R511	B-3
R512	B-3
R513	B-2
R514	A-2
R515	A-2
R516	B-2
R517	B-2
R518	B-2
R519	B-2
R520	B-6
R521	A-6
R522	A-1
R523	A-1
R524	A-1
R525	A-1
R526	B-1
R527	B-1
R528	C-1
R529	C-1
R531	C-2
R533	B-1
R534	C-1
R536	D-1
R537	D-2
R538	D-2
R539	D-2
R540	B-2
R541	B-3
R542	C-6
R543	C-5
R550	C-1
R551	C-2
T501	B-6

SECTION 6
REPAIR PARTS LIST

6-1. EXPLODED VIEWS

NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

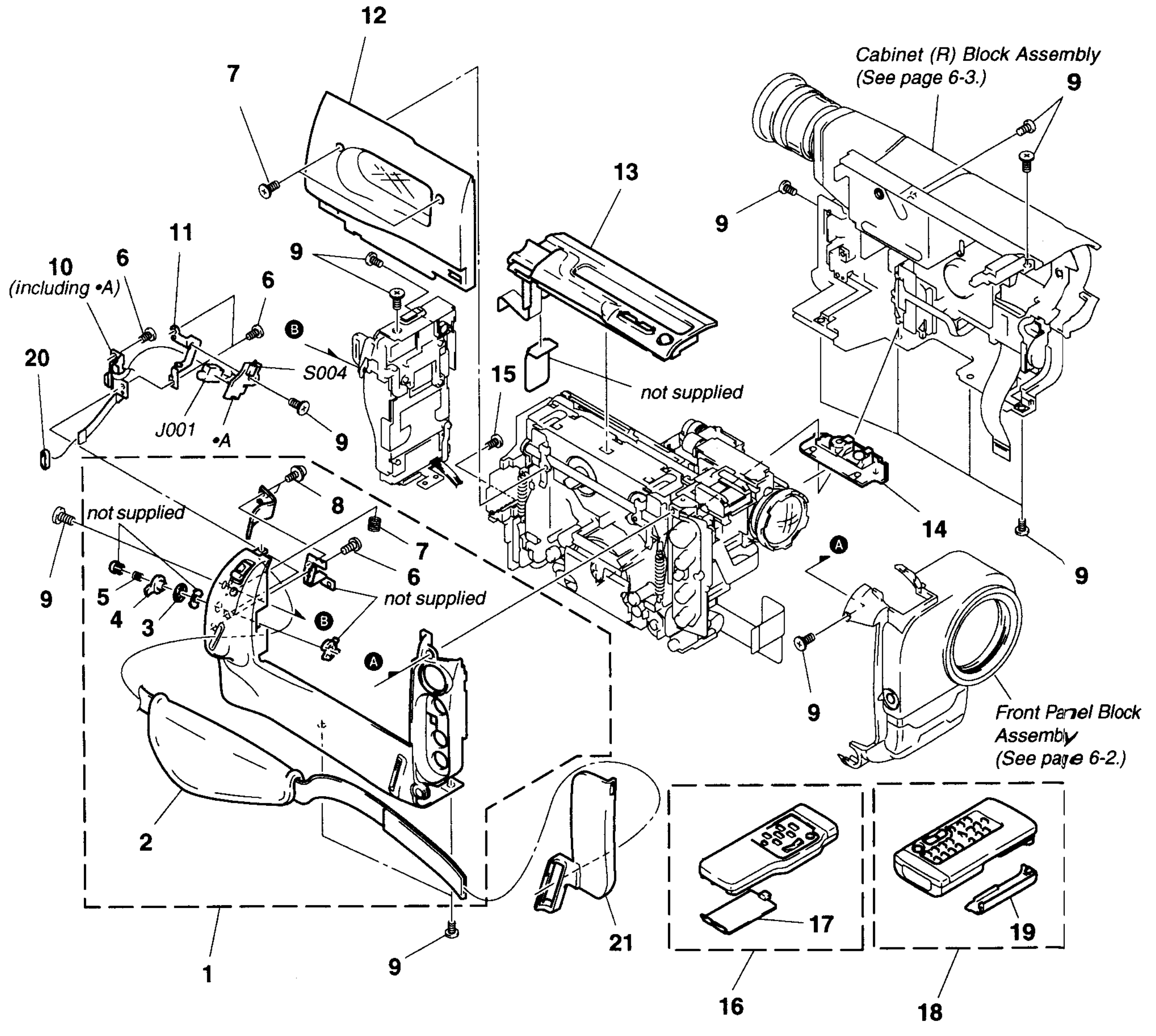
- Abbreviation

AUS : Australian model
CND : Canadian model
EE : East European model
JE : Tourist model
NE : North European model
RU : Russian model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

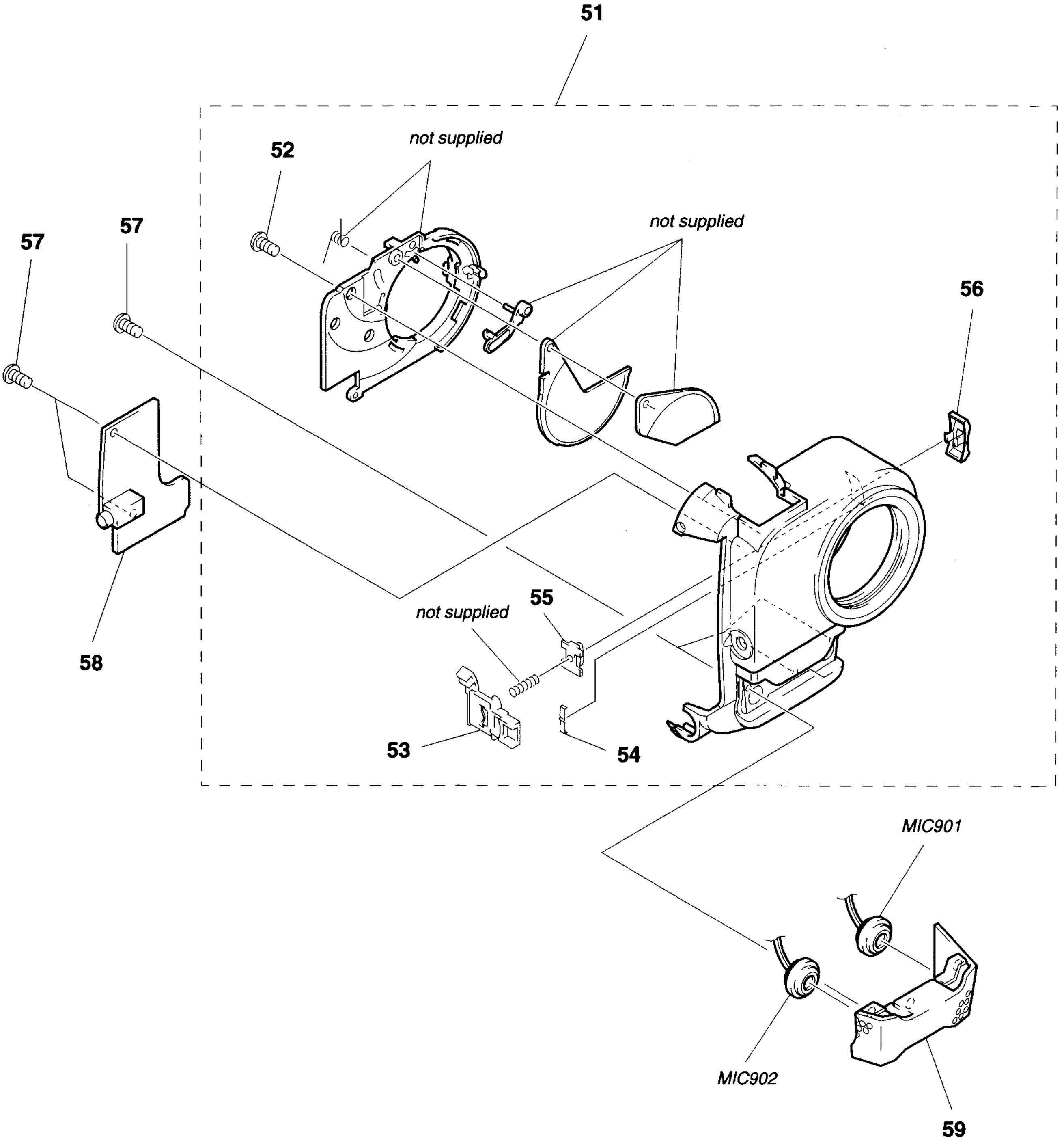
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

6-1-1. CABINET (L) BLOCK ASSEMBLY


12
7
Cabinet (R) Block Assembly
(See page 6-3.)
9
13
9
11
10
(including •A)
6
6
9
B
S004
20
J001
•A
9
15
not supplied
8
14
7
not supplied
6
not supplied
9
A
9
5
4
3
B
A
9
Front Panel Block Assembly
(See page 6-2.)
2
17
19
21
1
9
16
18

Ref. No.	Part No.	Description	Remark
1	X-3947-247-1	CABINET (L) ASSY (TR920E/TR930)	
1	X-3947-434-1	CABINET (L) ASSY (TR820E/TR825E)	
2	3-969-339-31	BELT, GRIP	
3	3-970-854-01	SPRING, STAND-BY	
4	3-969-081-01	KNOB, STAND-BY	
5	3-972-501-01	SPRING, COMPRESSION	
6	3-948-339-61	TAPPING	
7	3-302-492-00	SPRING, COMPRESSION	
8	3-679-362-11	SCREW	
9	3-968-729-01	SCREW (M2), LOCK ACE, P2	
10	1-475-098-21	SWITCH BLOCK, CONTROL (SS-8100)	
* 11	3-975-532-01	HOLDER, EL	
12	X-3947-199-1	LID ASSY, CASSETTE	
13	1-475-099-71	SWITCH BLOCK, VTR CONTROL (FK)(TR930)	
13	1-475-099-91	SWITCH BLOCK, VTR CONTROL (FK) (TR820E/TR825E)	
13	1-475-099-81	SWITCH BLOCK, VTR CONTROL (FK)(TR920E)	
14	3-975-516-01	SCREW, TRIPOD	
15	3-713-786-21	SCREW (M2X3)	
16	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR820E/TR920E/TR930)	
17	3-859-131-01	LID, BATTERY CASE (for RMT-708)	
18	8-917-593-90	REMOTE COMMANDER (RMT-717)(TR825E)	
19	3-742-854-01	LID, BATTERY CASE (for RMT-717)	
20	1-500-227-11	BEAD FERRITE (TR825E)	
21	3-975-522-01	COVER, JACK	
J001	1-565-276-21	JACK, ULTRA SMALL 1P (LANC)	
S004	1-572-467-71	SWITCH, PUSH (1 KEY) (EJECT)	

6-1-2. FRONT PANEL BLOCK ASSEMBLY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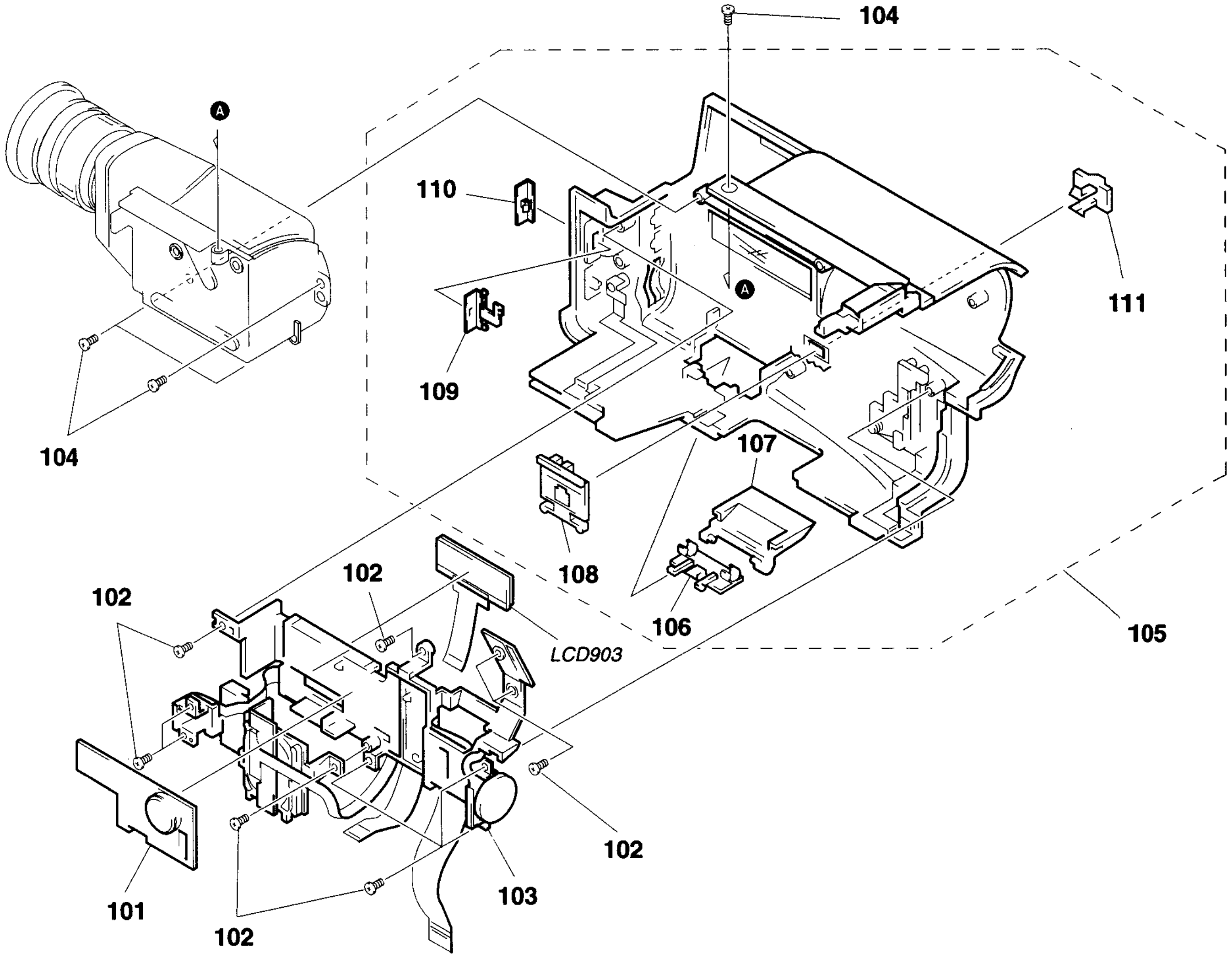
Ref. No.	Part No.	Description	Remark
51	X-3947-302-1	PANEL ASSY, FRONT (TR930)	
51	X-3947-313-1	PANEL ASSY, FRONT (TR920E)	
51	X-3947-307-1	PANEL ASSY, FRONT (TR820E/TR825E)	
52	3-719-601-01	SCREW (B2X5), TAPPING	
* 53	3-975-941-01	BUTTON, POWER	
54	3-969-270-01	SPRING, CLICK	
55	3-968-740-01	BUTTON, POWER LOCK	
56	3-968-739-01	BUTTON, POWER	
57	3-948-339-61	TAPPING	
58	A-7073-168-A	MI-29 (HP) BOARD, COMPLETE (TR820E/TR825E/TR920E)	
58	A-7073-172-A	MI-29 (HCI) BOARD, COMPLETE (TR930)	
59	X-3947-296-1	GRILLE ASSY	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MICROPHONE (R-CH)	

6-1-3. CABINET (R) BLOCK ASSEMBLY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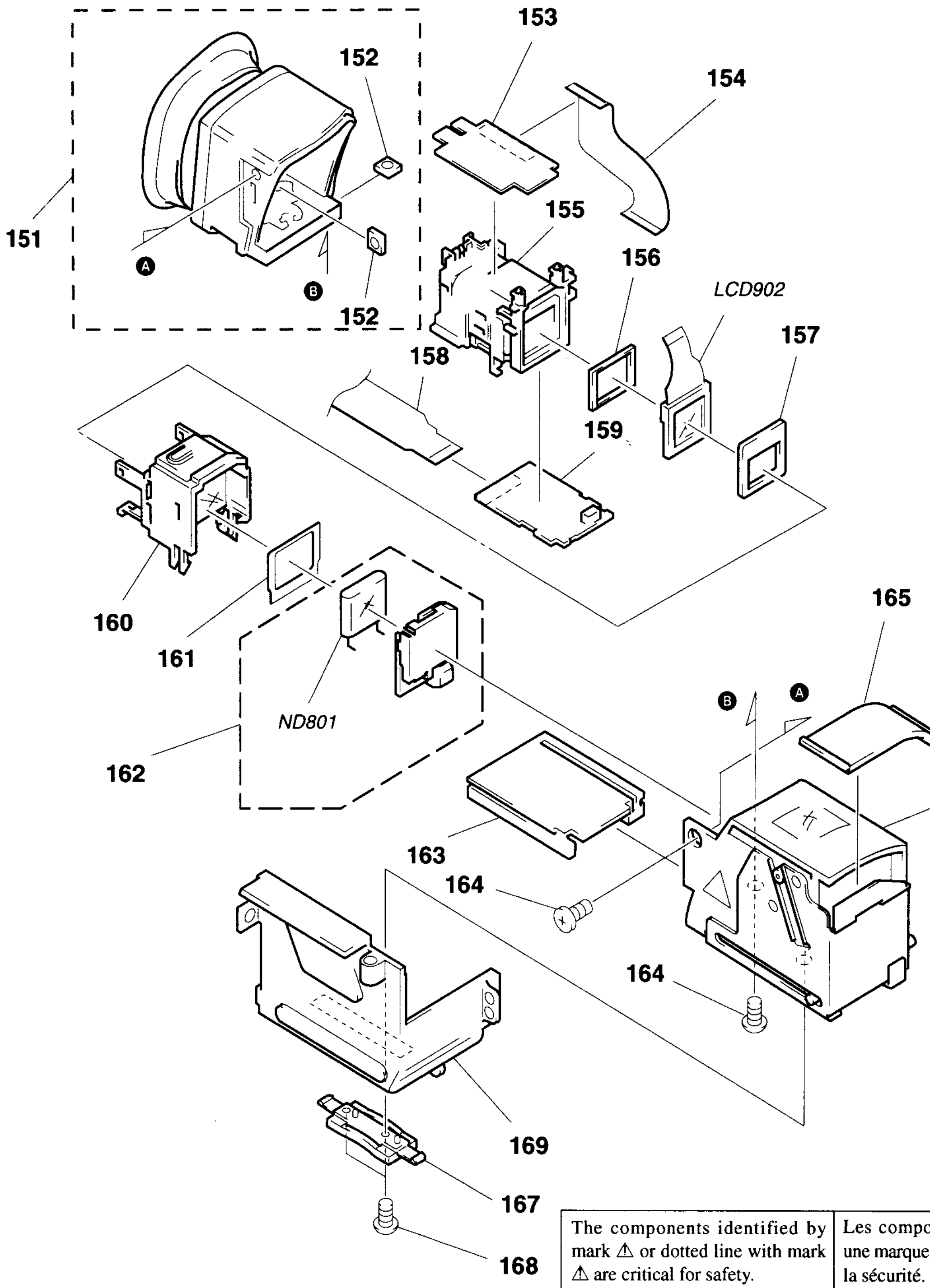
102

Ref. No.	Part No.	Description	Remark
101	A-7073-173-A	LC-56 (HCI) BOARD, COMPLETE	
102	3-948-339-61	TAPPING	
103	1-475-160-11	SWITCH BLOCK, CONTROL	
104	3-968-729-01	SCREW (M2), LOCK ACE, P2	
105	X-3947-297-1	CABINET (R) ASSY (TR930)	
105	X-3947-308-1	CABINET (R) ASSY (TR820E)	
105	X-3947-312-1	CABINET (R) ASSY (TR825E)	
105	X-3947-314-1	CABINET (R) ASSY (TR920E)	
* 106	3-975-959-01	SLIDER, LI	
107	3-975-958-01	LID, LI	
* 108	3-975-955-01	SLIDER, ST	
* 109	3-975-962-01	SLIDER, SS	
110	3-975-961-01	KNOB, SS	
111	3-975-954-01	KNOB, ST	
LCD903	1-801-697-11	DISPLAY PANEL, LIQUID CRYSTAL	

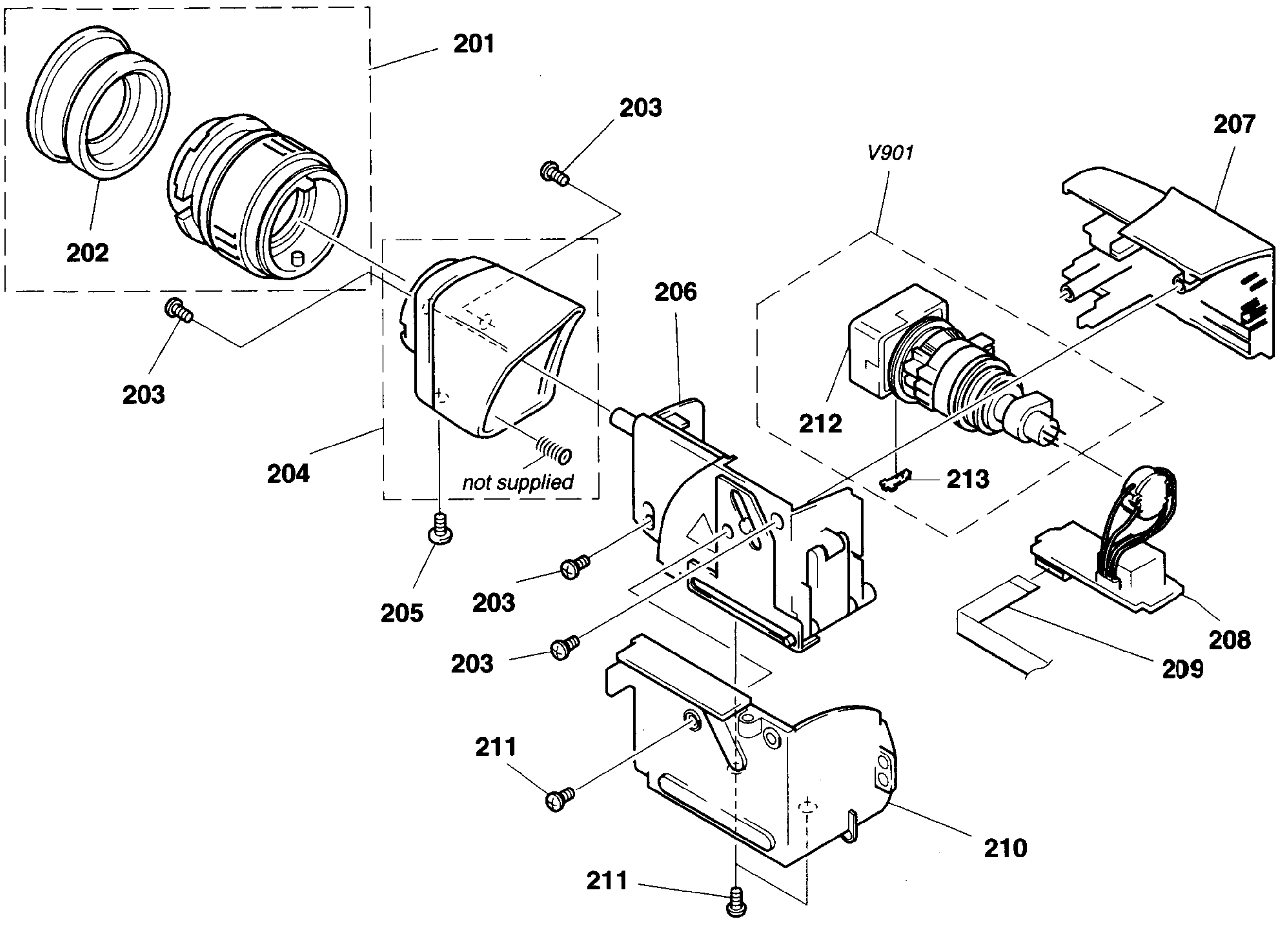
6-1-4. COLOR EVF BLOCK ASSEMBLY (TR920E/TR930)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
151	X-3947-301-1	CABINET (REAR) ASSY, VF	
152	3-718-233-01	NUT, PLATE	
153	A-7073-095-A	VF-112 BOARD, COMPLETE (TR930)	
153	A-7073-120-A	VF-112P BOARD, COMPLETE (TR920E)	
154	1-665-149-11	FP-530 FLEXIBLE BOARD	
155	X-3947-193-1	LENS ASSY, VF	
* 156	3-969-924-01	CUSHION (Y), LCD	
157	3-960-302-11	CUSHION (1), LCD	
158	1-660-301-11	FP-430 FLEXIBLE BOARD (TR930)	
158	1-665-807-11	FP-505 FLEXIBLE BOARD (TR920E)	
159	A-7073-094-A	VF-111 BOARD, COMPLETE (TR930)	
159	A-7073-119-A	VF-111P BOARD, COMPLETE (TR920E)	
160	X-3946-709-2	HOLDER ASSY (BLACK), PRISM	
* 161	3-969-923-01	CUSHION, BACK LIGHT	
162	A-7073-096-A	LB-50 BOARD, COMPLETE	
163	3-975-976-01	CABINET (BOTTOM), VF	
164	3-968-729-61	SCREW (M2X3), LOCK ACE, P2	
165	3-975-975-01	LID, SLIDE	
166	X-3947-300-1	CABINET (FRONT) ASSY, VF	
167	3-975-977-01	SLIDER	
168	3-968-729-11	SCREW (M2), LOCK ACE, P2 (TR930)	
168	3-968-729-41	SCREW (M2), LOCK ACE, P2 (TR920E)	
169	X-3947-299-1	CABINET (S) ASSY, BASE	
LCD902	8-753-016-10	LCX005BK-1/5 COMPLETE	
⚠ND801	1-517-414-21	FLUORESCENT TUB (0.55 INCH)	

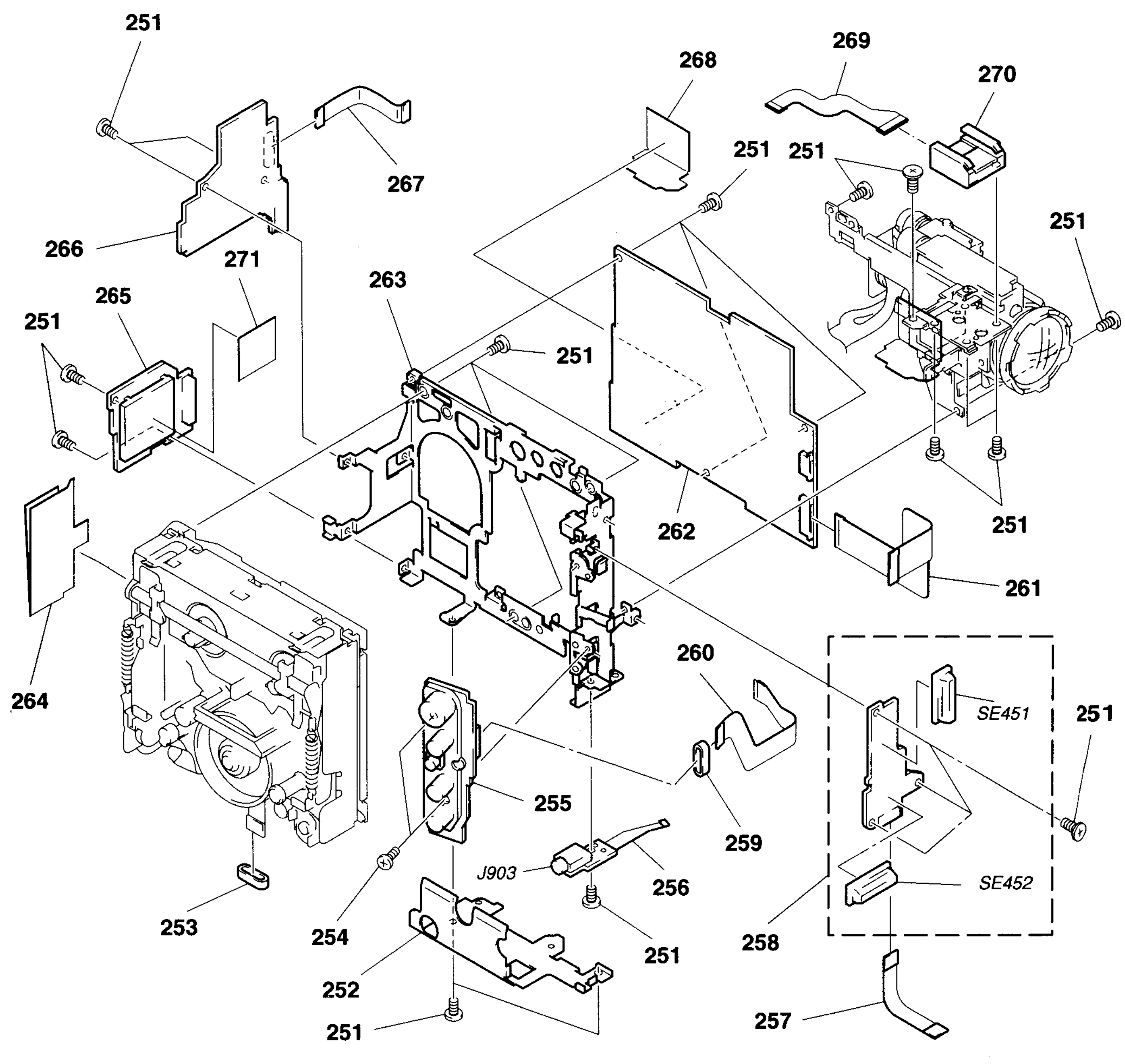
6-1-5. B/W EVF BLOCK ASSEMBLY (TR820E/TR825E)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

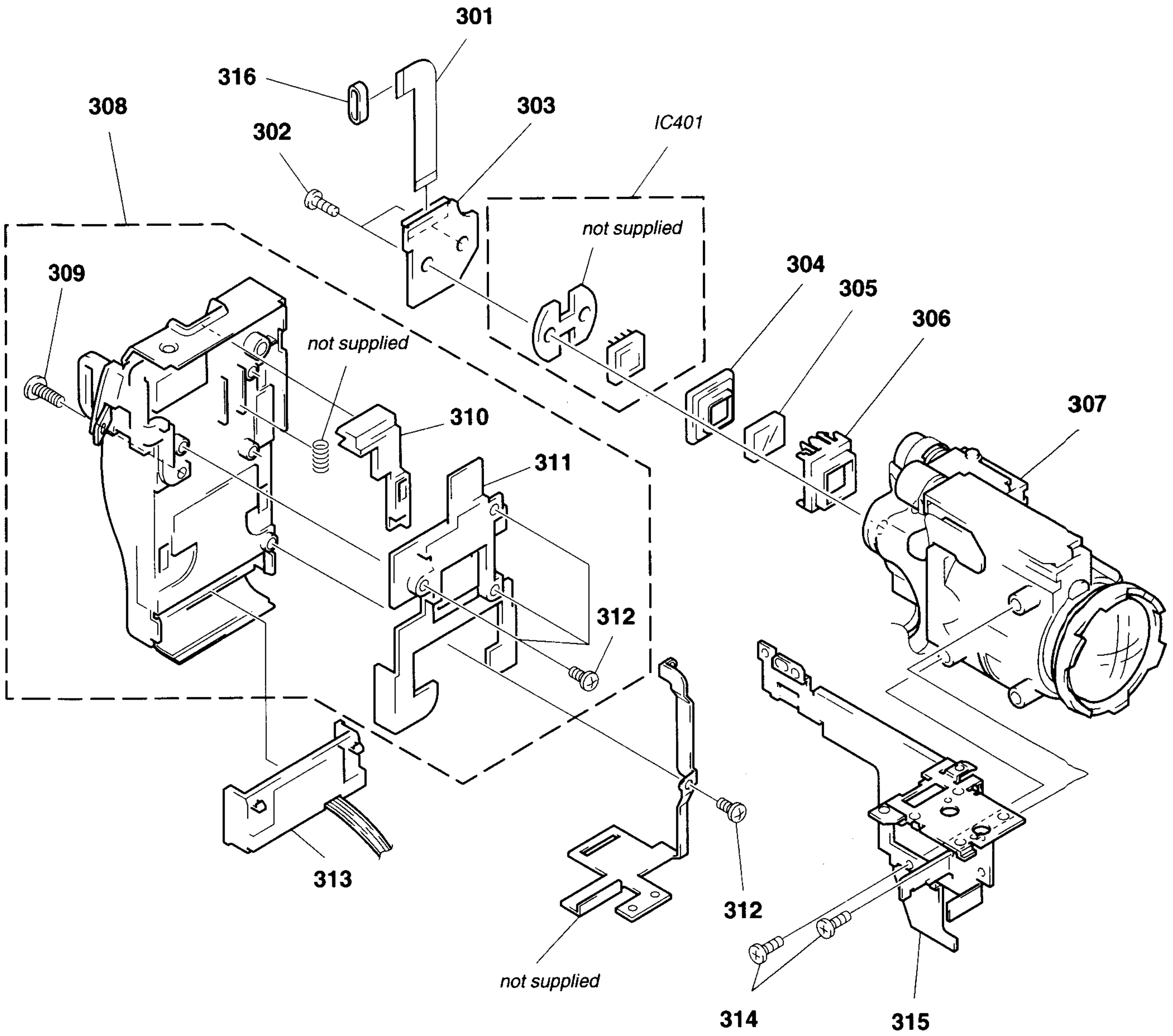
Ref. No.	Part No.	Description	Remark
201	X-3944-966-1	FINDER ASSY	
202	3-963-391-01	EYE CUP	
203	3-948-339-01	SCREW, TAPPING	
204	X-3947-311-1	CABINET (B) ASSY, VF	
205	3-703-454-41	SCREW (1.7X3), TAPPING	
206	X-3947-310-1	CABINET (L) ASSY, VF	
207	3-976-002-01	CABINET (R), VF	
208	A-7056-774-A	VF-99 (HP) BOARD, COMPLETE	
209	1-661-547-11	FP-490 FLEXIBLE BOARD	
210	X-3947-309-1	CABINET (B) ASSY, BASE	
211	3-719-381-01	SCREW (M2X4)	
212	3-977-292-01	MASK, CRT	
213	3-725-130-01	COVER, HIGH VOLTAGE	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB)	

6-1-6. MAIN BOARDS ASSEMBLY



Ref. No.	Part No.	Description	Remark
251	3-713-786-21	SCREW (M2X3)	
* 252	3-975-534-01	FRAME (B), MD	
253	1-500-227-11	BEAD, FERRITE (TR820E/TR825E)	
254	3-968-729-01	SCREW (M2), LOCK ACE, P2	
255	A-7073-121-A	PJ-80 (VHCRP) BOARD, COMPLET (TR820E/TR825E)	
255	A-7073-176-A	PJ-80 (HCI) BOARD, COMPLETE (TR930)	
255	A-7073-101-A	PJ-80 (VHCRJ) BOARD, COMPLETE (TR920E)	
256	1-665-148-11	FP-527 FLEXIBLE BOARD	
257	1-660-277-11	FP-377 FLEXIBLE BOARD	
258	A-7073-175-A	SE-61 (HCI) BOARD, COMPLETE	
259	1-500-226-31	BEAD, FERRITE (EXCEPT TR920E:E,JE)	
260	1-665-146-11	FP-516 FLEXIBLE BOARD	
261	1-665-145-11	FP-512 FLEXIBLE BOARD	
262	A-7093-225-A	VC-190 (HDP) BOARD, COMPLETE (TR825E)	
262	A-7093-227-A	VC-190 (HP) BOARD, COMPLETE (TR820E)	
262	A-7093-228-A	VC-190 (HCI) BOARD, COMPLETE (TR930)	
262	A-7093-264-A	VC-190 (HCPE) BOARD, COMPLETE (TR920E)	
263	3-975-515-01	FRAME, MD	
264	3-975-520-01	SHEET, LS FLEXIBLE GUARD	
265	A-7093-226-A	DD-95 (HD) BOARD, COMPLETE (TR825E)	
265	A-7093-265-A	DD-95 (HCPE) BOARD, COMPLETE (TR920E)	
265	A-7093-229-A	DD-95 (HCI) BOARD, COMPLETE (TR930)	
265	A-7093-292-A	DD-95 (HP) BOARD, COMPLETE (TR820E)	
266	A-7073-167-A	MM-35 (HDP) BOARD, COMPLETE (TR825E)	
266	A-7073-174-A	MM-35 (HCI) BOARD, COMPLETE (TR820E/TR920E/TR930)	
267	1-665-142-11	FP-500 FLEXIBLE BOARD	
* 268	3-976-662-01	GUARD, MD FLEXIBLE	
269	1-660-280-11	FP-380 FLEXIBLE BOARD (TR825E)	
269	1-665-681-11	FP-524 FLEXIBLE BOARD (TR920E/TR930)	
270	1-774-867-21	CONNECTOR, EXTERNAL (HOT SHOE) 8P	
271	3-976-739-01	INSULATOR, DD	
J903	1-659-514-21	JACK (SMALL TYPE) 1P (HEADPHONES)	
SE451	1-810-725-71	SENSOR, ANGULAR VELOCITY (YAW)	
SE452	1-810-725-81	SENSOR, ANGULAR VELOCITY (PITCH)	

6-1-7. BATTERY PANEL BLOCK ASSEMBLY AND CCD BLOCK ASSEMBLY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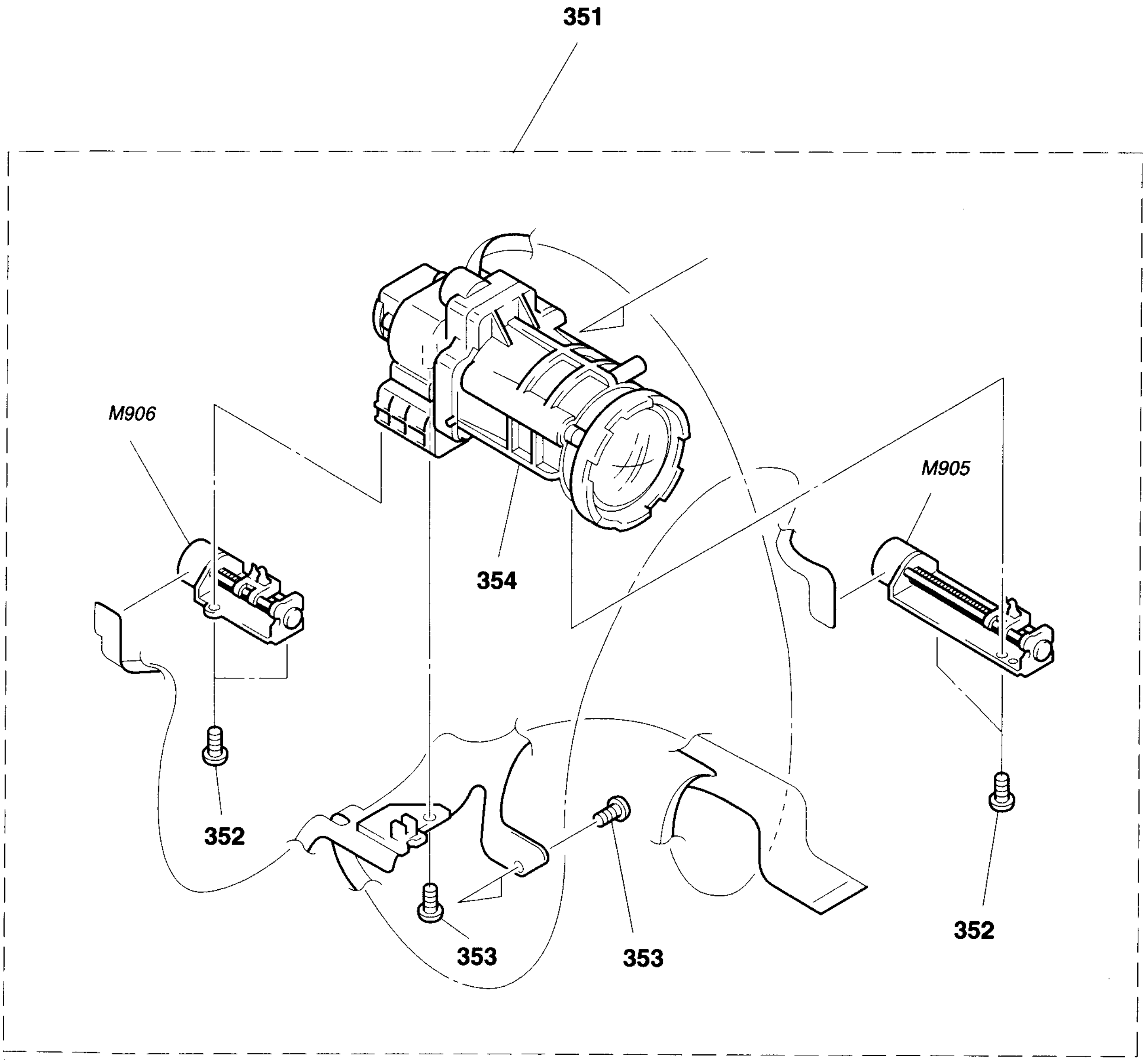
Be sure to read "Note on the CCD Imager replacement" on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
301	1-660-300-11	FP-426 FLEXIBLE BOARD	
302	3-318-203-11	SCREW (B1.7X6), TAPPING	
303	A-7073-100-A	CD-166 BOARD, COMPLETE	
304	3-961-192-11	RUBBER (FH), SEAL	
305	1-547-787-41	FILTER BLOCK, OPTICAL	
306	3-963-467-11	ADAPTOR (FH), CCD FITTING	
307	8-848-710-01	LENS, ZOOM (VCL-4214VA)	
308	X-3947-298-1	PANEL ASSY, BATTERY	
309	3-968-729-01	SCREW (M2), LOCK ACE, P2	
310	3-975-500-11	KNOB, RELEASE	
* 311	3-975-501-01	COVER, LOCK	
312	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
313	1-694-076-21	TERMINAL BOARD, BATTERY	
314	3-948-339-61	TAPPING	
315	3-975-946-01	FRAME, LENS	
316	1-500-227-11	BEAD, FERRITE (EXCEPT TR920E:EJE)	
IC401	A-7030-615-A	CCD BLOCK ASSY (CCD IMAGER) (079 SERVICE)(TR930)	
IC401	A-7030-782-A	CCD BLOCK ASSY (CCD IMAGER) (211 SERVICE)(TR820E/TR825E/TR920E)	

6-1-8. LENS DEVICE (VCL-4214VA)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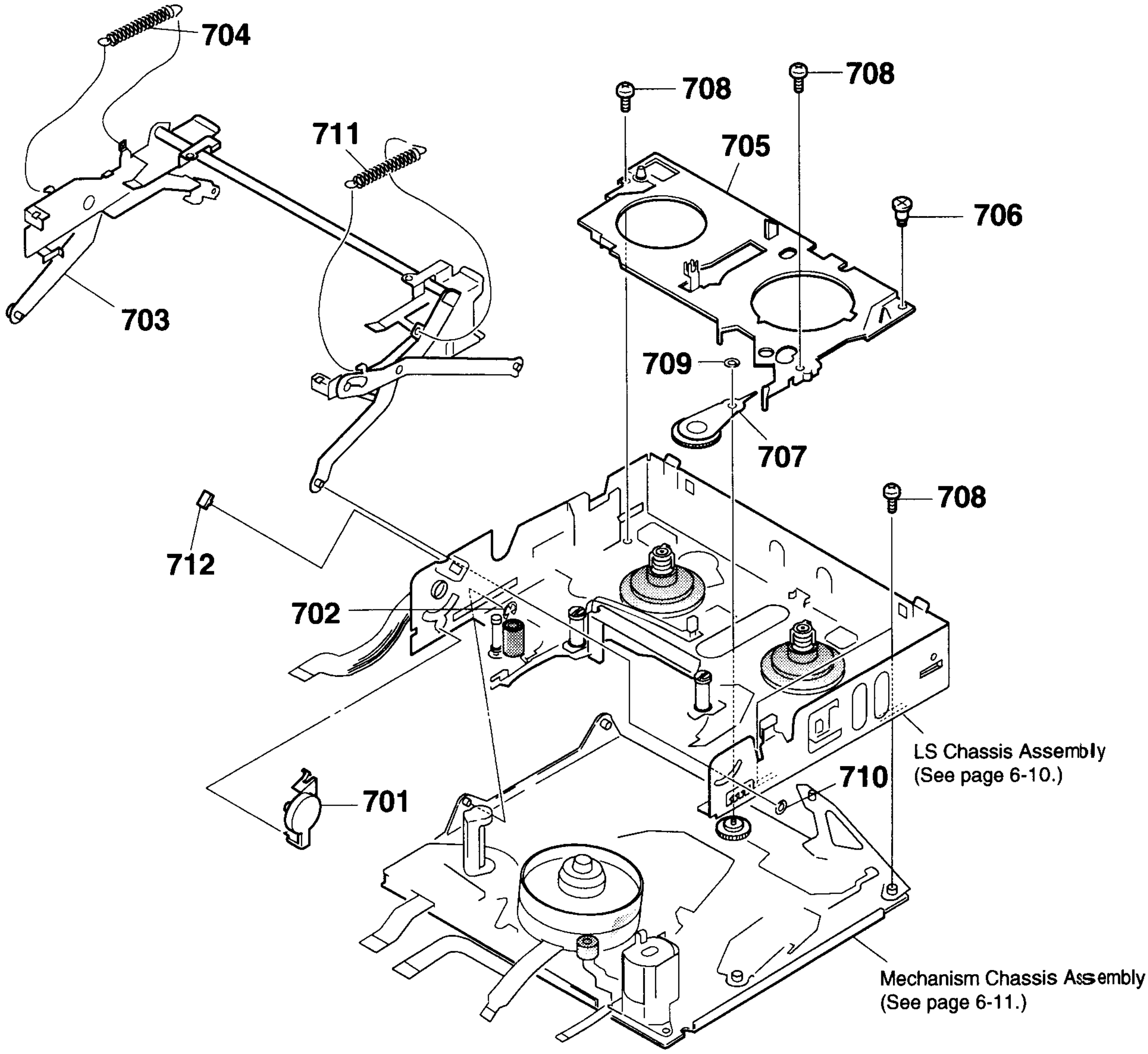
Ref. No.	Part No.	Description	Remark
351	8-848-710-01	LENS, ZOOM (VCL-4214VA)	
352	3-713-791-41	SCREW (M1.7X5), TAPPING, PS	
353	3-708-302-01	SCREW (BT3 P1.7X4C)	
354	A-4910-808-A	DEVICE ASSY, LSV-510A (RP)	
M905	1-698-760-01	MOTOR, FOCUS STEPPING	
M906	1-698-759-01	MOTOR, ZOOM STEPPING	

6-1-9. CASSETTE COMPARTMENT ASSEMBLY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LS Chassis Assembly
(See page 6-10.)
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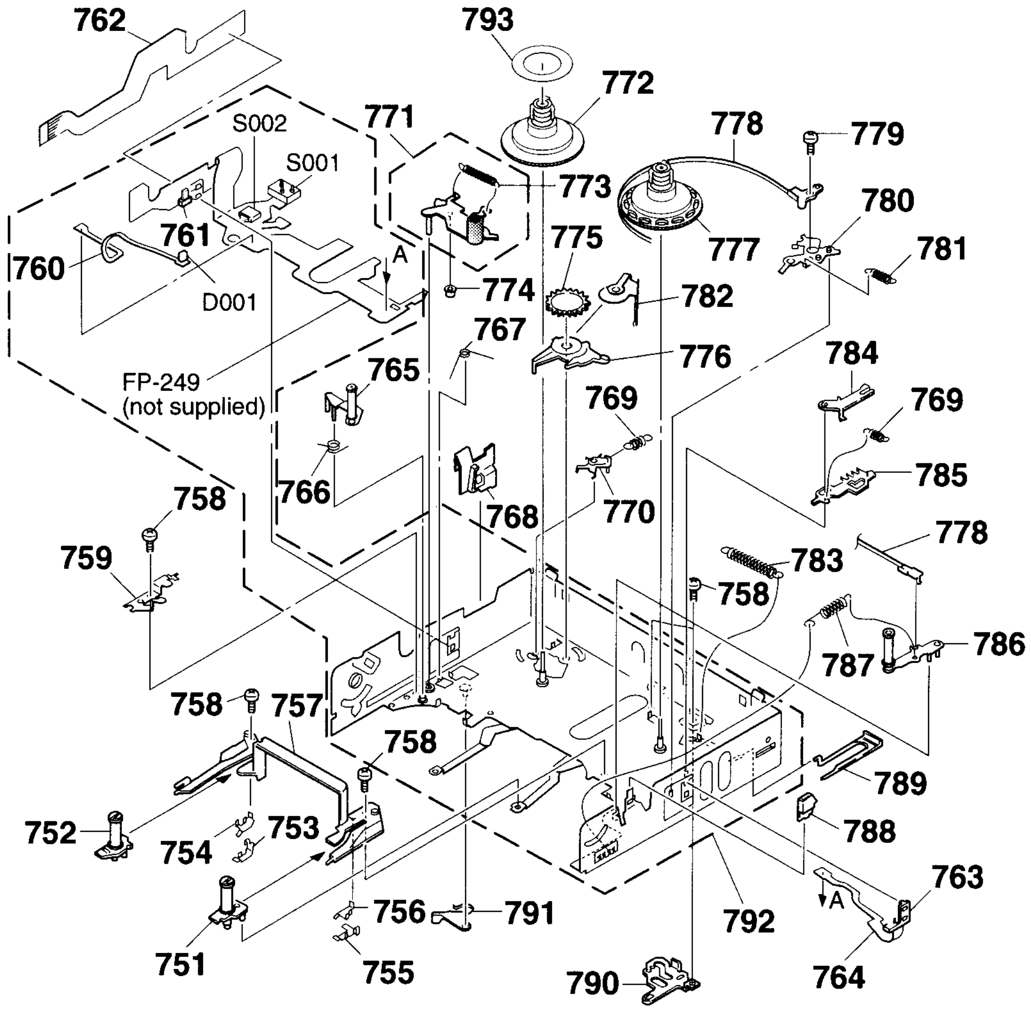
701
Mechanism Chassis Assembly
(See page 6-11.)

Ref. No.	Part No.	Description	Remark
701	A-7040-421-A	DAMPER ASSY	
702	7-624-102-04	STOP RING 1.5, TYPE -E	
703	X-3945-400-1	CASSETTE COMPARTMENT ASSY	
704	3-965-587-03	SPRING, TENSION	
705	3-965-584-01	RETAINER, GOOSENECK	
706	3-976-055-01	SCREW (M1.4X1)	
707	X-3945-399-1	GEAR ASSY, GOOSENECK	
708	3-947-503-01	SCREW (M1.4X2.5)	
709	3-331-007-21	WASHER	
710	3-727-176-01	WASHER, STOPPER	
711	3-973-268-01	SPRING, TENSION	
712	3-971-076-01	FASTENER, D	

6-1-10. LS CHASSIS ASSEMBLY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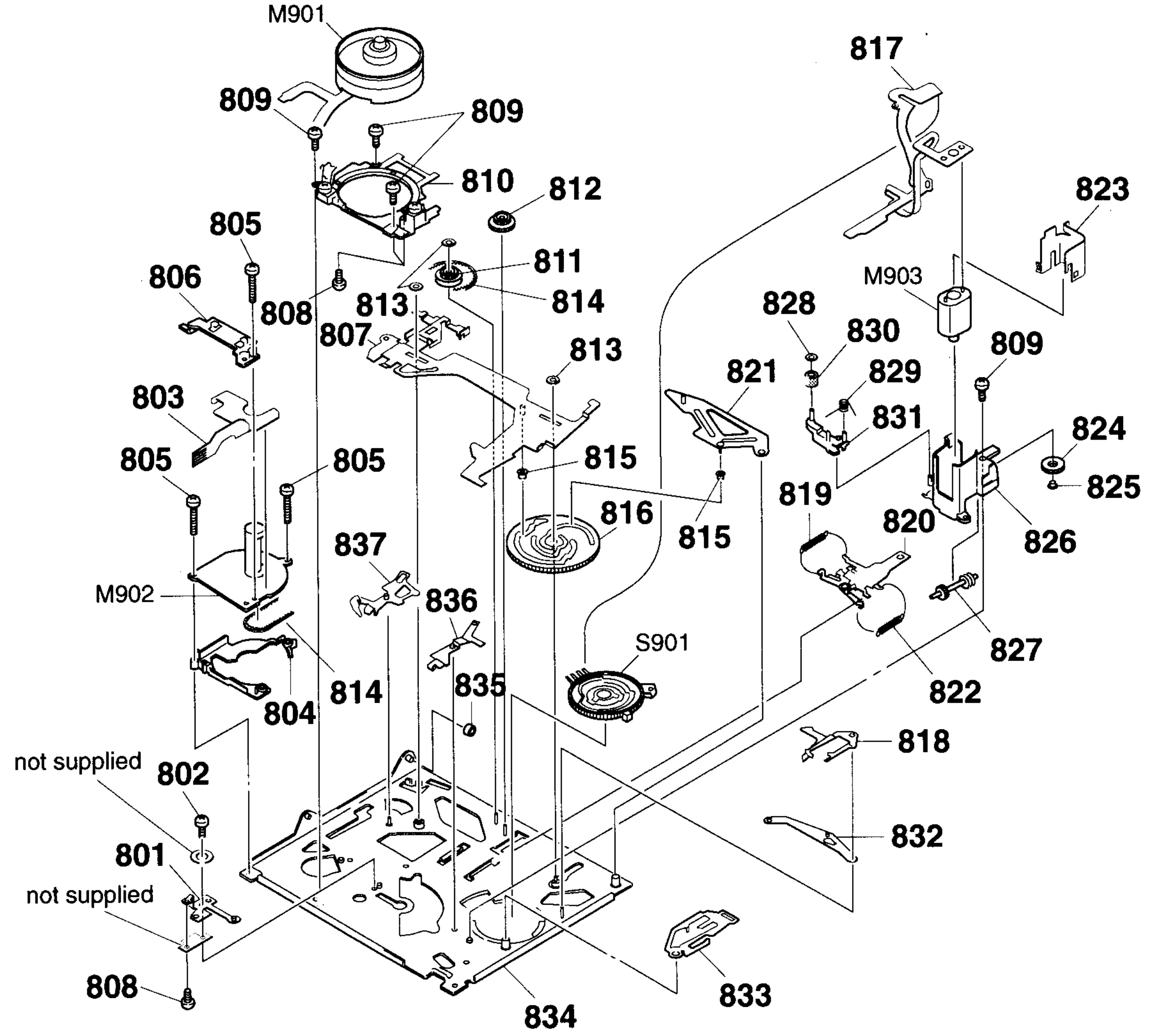
Ref. No.	Part No.	Description	Remark
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE	
752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE	
753	3-965-559-01	STOPPER (T)	
754	3-965-557-01	STOPPER (T), GB	
755	3-965-558-01	STOPPER (S)	
756	3-965-556-01	STOPPER (S), GB	
757	3-965-553-01	RAIL, GUIDE	
758	3-947-503-01	SCREW (M1.4X2.5)	
759	3-965-573-01	RETAINER, TG4	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
761	3-965-552-01	HOLDER (T), SENSOR	
762	1-657-786-11	FP-221 FLEXIBLE BOARD	
763	3-965-551-01	HOLDER (S), SENSOR	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
765	A-7040-417-A	ARM BLOCK ASSY, TG4	
766	3-965-574-01	SPRING, TORSION	
767	3-965-575-01	SPRING (PINCH), TORSION	
768	3-965-568-01	GUIDE, LOCK	
769	3-965-562-01	SPRING (RATCHET), TENSION	
770	3-965-581-01	RATCHET, T	
771	X-3945-394-1	ARM ASSY, PINCH	
772	X-3945-398-1	DECK ASSY, REEL, T	
773	3-965-648-01	SPRING (PINCH), TENSION	
774	3-965-579-01	ROLLER, PINCH PRESS	
775	3-965-563-01	GEAR, T SOFT	
776	3-965-565-01	CLAW, T SOFT	
777	X-3945-397-1	DECK ASSY, REEL, S	
778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
779	3-945-756-01	SCREW (M1.4X3)	
780	3-965-583-01	ARM, RVS	
781	3-965-580-01	SPRING, TENSION	
782	3-966-384-01	SPRING, T SOFT	
783	3-965-578-01	SPRING, TENSION	
784	3-965-560-01	RATCHET, S	
785	3-965-561-01	PLATE, RELEASE, S RATCHET	
786	X-3945-395-1	ARM ASSY, TG1	
787	3-965-576-01	SPRING (TG1), TENSION	
788	3-965-567-01	LID OPEN	
789	3-965-566-01	COVER, LS GUIDE	
* 790	3-965-577-01	PLATE, CAM, LS	
791	3-965-569-01	ARM, EJ	
792	A-7040-427-A	CHASSIS (S1) ASSY, LS	
* 793	3-972-838-01	SPACER, REEL	
D001	8-719-988-42	DIODE GL453	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	

6-1-11. MECHANISM CHASSIS ASSEMBLY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M902
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Ref. No.	Part No.	Description	Remark
801	X-3947-343-1	GROUND (IM) ASSY, SHAFT	
802	3-965-550-02	SCREW (M1.7X1.6)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
804	3-965-545-01	SPACER, CAPSTAN	
805	3-965-549-01	SCREW (M1.4 X 6.5)	
806	3-966-349-01	HOLDER, FLEXIBLE	
807	3-971-644-01	SLIDER (2), M	
808	3-971-939-01	SCREW (M1.4)	
809	3-947-503-01	SCREW (M1.4X2.5)	
810	A-7040-416-A	BASE BLOCK ASSY, DRUM	
811	3-965-527-01	GEAR, CHANGE	
812	3-965-544-01	GEAR, RELAY	
813	3-331-007-21	WASHER	
814	3-965-546-01	BELT, TIMING	
815	3-965-533-01	ROLLER, LS	
816	3-965-528-01	GEAR, CAM	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
818	3-965-529-01	PLATE, REGULATOR, TENSION	
819	3-965-536-01	SPRING, TENSION	
820	X-3945-388-1	SLIDER ASSY, GL	
821	3-965-532-01	ARM, LS	
822	3-965-535-01	SPRING, TENSION	
823	3-965-542-01	SHIELD, MOTOR	
824	3-965-539-01	GEAR (A)	
825	3-965-538-01	SLEEVE, MOTOR HOLDER	
826	3-965-540-01	HOLDER, MOTOR	
827	3-965-541-01	SHAFT, WORM	
828	3-321-393-01	WASHER, STOPPER	
829	3-965-724-01	SPRING, TORSION	
830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
831	X-3945-407-1	ARM ASSY, HC ROLLER	
832	3-965-531-01	ARM, GL	
833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
834	X-3946-548-2	CHASSIS ASSY, MECHANICAL	
835	3-965-526-02	ROLLER, LS GUIDE	
836	3-965-547-01	ARM, HC DRIVING	
837	3-965-534-01	PLATE, PRESS, PINCH	
M901	A-7048-851-A	DRUM ASSY (DGH-0D5A-R) (TR820E/TR825E/TR920E)	
M901	A-7048-849-A	DRUM ASSY (DGH-0D4A-R)(TR930)	
M902	8-835-531-01	MOTOR, DC SCE-0601A (CAPSTAN)	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	

6-2. ELECTRICAL PARTS LIST

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μ A..., uPA...: μ PA..., uPB...: μ PB..., uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H
- Canadian model is abbreviated as CND.
- East European model is abbreviated as EE.
- North European model is abbreviated as NE.
- Russian model is abbreviated as RU.
- Australian model is abbreviated as AUS.
- Tourist model is abbreviated as JE.

Ref. No.	Part No.	Description			Remark
	A-7073-100-A	CD-166 BOARD, COMPLETE			
		***********************			
		(IC401 is not included to the mounted board)			
		(Ref. No. 3,000 Series)			
		< CAPACITOR >			
C401	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C405	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C406	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C407	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
		< CONNECTOR >			
CN401	1-766-677-21	CONNECTOR, FFC/FPC 16P			
		< IC >			
IC401	A-7030-615-A	CCD BLOCK ASSY (CCD IMAGER)(079 SERVICE)			(TR920E/TR930)
IC401	A-7030-782-A	CCD BLOCK ASSY (CCD IMAGER)(211 SERVICE)			(TR820E/TR825E)
		< COIL >			
L401	1-412-963-11	INDUCTOR	100uH		
		< TRANSISTOR >			
Q402	8-729-117-73	TRANSISTOR	2SC4178-F14		
		< RESISTOR >			
R404	1-216-829-11	METAL CHIP	4.7K	5%	1/16W

Ref. No.	Part No.	Description			Remark
	A-7093-226-A	DD-95 (HD) BOARD, COMPLETE (TR825E)			
		***********************************			
	A-7093-292-A	DD-95 (HP) BOARD, COMPLETE (TR820E)			
		***********************************			
	A-7093-265-A	DD-95 (HCPE) BOARD, COMPLETE (TR920E)			
		************************************			
	A-7093-229-A	DD-95 (HCI) BOARD, COMPLETE (TR930)			
		**************************			
		(Ref. No. 5,000 Series)			
		< CAPACITOR >			
C501	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C502	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C503	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C504	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C505	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C506	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C507	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C508	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C509	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C510	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C511	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C512	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C513	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C514	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C515	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C516	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C517	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C518	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C525	1-135-159-21	TANTALUM CHIP	10uF	10%	20V
C526	1-135-159-21	TANTALUM CHIP	10uF	10%	20V
C527	1-135-165-11	TANTAL. CHIP	33uF	20%	16V
C530	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C531	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C532	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C533	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C534	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C535	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C536	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C537	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C538	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C539	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C540	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C541	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C542	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C543	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C544	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C545	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C546	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C547	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C548	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C549	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V (TR920E/TR930)
C550	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (TR920E/TR930)
C551	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V (TR825E/TR920E/TR930)

Be sure to read "Note on the CCD Imager replacement" on page 4-8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN501	1-569-775-21	PIN, CONNECTOR 5P	
CN502	1-691-520-11	CONNECTOR, BOARD TO BOARD 48P	
		< DIODE >	
D501	8-719-057-68	DIODE SBS001C-TB	
D502	8-719-057-68	DIODE SBS001C-TB	
D503	8-719-057-68	DIODE SBS001C-TB	
D504	8-719-057-68	DIODE SBS001C-TB	
D505	8-719-027-77	DIODE MA796	
D506	8-719-057-68	DIODE SBS001C-TB	
D507	8-719-420-14	DIODE MA8082-M	
D508	8-719-420-14	DIODE MA8082-M	
		< IC >	
IC501	8-759-350-29	IC SN104213PM-T6	
		< COIL >	
L501	1-409-529-41	COIL, CHOKE 10uH	
L502	1-409-529-41	COIL, CHOKE 10uH	
L503	1-409-529-41	COIL, CHOKE 10uH	
L504	1-424-674-11	COIL, CHOKE 22uH	
L505	1-409-532-41	COIL, CHOKE 33uH	
L506	1-424-674-11	COIL, CHOKE 22uH	
L507	1-424-674-11	COIL, CHOKE 22uH	
L508	1-414-396-21	INDUCTOR 4.7uH	
L509	1-414-396-21	INDUCTOR 4.7uH	
L511	1-414-406-11	INDUCTOR 220uH	
L512	1-424-674-11	COIL, CHOKE 22uH	
L513	1-414-400-11	INDUCTOR 22uH	
L514	1-414-396-21	INDUCTOR 4.7uH	
L515	1-414-396-21	INDUCTOR 4.7uH	
L516	1-414-396-21	INDUCTOR 4.7uH	
		< IC LINK >	
⚠PS501	1-533-709-21	FUSE (SMD)(1.25A)(TR930)	
⚠PS501	1-533-711-21	LINK, IC (SMD)(1.25A)(TR820E/TR825E/TR920E)	
⚠PS502	1-533-709-21	FUSE (SMD)(1.25A)(TR930)	
⚠PS502	1-533-711-21	LINK, IC (SMD)(1.25A)(TR820E/TR825E/TR920E)	
⚠PS503	1-533-709-21	FUSE (SMD)(1.25A)(TR930)	
⚠PS503	1-533-711-21	LINK, IC (SMD)(1.25A)(TR820E/TR825E/TR920E)	
⚠PS504	1-533-709-21	FUSE (SMD)(1.25A)(TR930)	
⚠PS504	1-533-711-21	LINK, IC (SMD)(1.25A)(TR825E/TR920E)	
		< TRANSISTOR >	
Q501	8-729-039-86	TRANSISTOR FMMT717TA	
Q502	8-729-039-86	TRANSISTOR FMMT717TA	
Q503	8-729-039-86	TRANSISTOR FMMT717TA	
Q504	8-729-039-86	TRANSISTOR FMMT717TA	
Q505	8-729-041-24	TRANSISTOR NDS355AN	
Q506	8-729-804-41	TRANSISTOR 2SB1122-S	
Q507	8-729-039-86	TRANSISTOR FMMT717TA	
Q508	8-729-429-18	TRANSISTOR UN9213	
Q509	8-729-425-50	TRANSISTOR 2SB1462Q	
Q510	8-729-425-50	TRANSISTOR 2SB1462Q	
Q511	8-729-425-64	TRANSISTOR 2SD2216Q	

Ref. No.	Part No.	Description	Remark
Q512	8-729-425-64	TRANSISTOR 2SD2216Q	
Q513	8-729-425-64	TRANSISTOR 2SD2216Q	(TR920E/TR930)
Q514	8-729-429-18	TRANSISTOR UN9213	(TR920E/TR930)
Q515	8-729-041-23	TRANSISTOR NDS356AP	(TR920E/TR930)
Q517	8-729-429-18	TRANSISTOR UN9213	(TR920E/TR930)
Q518	8-729-041-23	TRANSISTOR NDS356AP	(TR920E/TR930)
Q519	8-729-429-18	TRANSISTOR UN9213	(TR825E/TR920E/TR930)
Q520	8-729-429-18	TRANSISTOR UN9213	(TR825E/TR920E/TR930)
Q521	8-729-041-24	TRANSISTOR NDS355AN	(TR825E/TR920E/TR930)
		< RESISTOR >	
R501	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R502	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R503	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R504	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R505	1-218-907-11	METAL GLAZE 330K 0.50% 1/16W	
R506	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R507	1-216-813-11	METAL CHIP 220 5% 1/16W	
R508	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R509	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R510	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R511	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R512	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R513	1-216-864-11	METAL CHIP 0 5% 1/16W	
R514	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R515	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R516	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R517	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R518	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R519	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R520	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R521	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R522	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R523	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R524	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R525	1-218-877-11	METAL GLAZE 18K 0.50% 1/16W	
R526	1-218-879-11	METAL GLAZE 22K 0.50% 1/16W	(TR930)
R526	1-218-893-11	METAL GLAZE 82K 0.50% 1/16W	(TR820E/825E/TR920E)
R527	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR820E/825E/TR920E)
R527	1-218-891-11	METAL GLAZE 68K 0.50% 1/16W	(TR930)
R528	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TR920E/TR930)
R529	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR920E/TR930)
R531	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR820E/825E)
R533	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR920E/TR930)
R534	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR920E/TR930)
R536	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TR825E/TR920E/TR930)
R537	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TR825E/TR920E/TR930)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R538	1-216-851-11	METAL CHIP 330K 5% 1/16W	(TR825E/TR920E/TR930)
R539	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR825E/TR920E/TR930)
R540	1-216-797-11	METAL CHIP 10 5% 1/16W	
R541	1-216-864-11	METAL CHIP 0 5% 1/16W	
R542	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R543	1-216-296-91	CONDUCTOR, CHIP (3216)	
R550	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR920E/TR930)
R551	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TR825E/TR920E/TR930)
		< TRANSFORMER >	
⚠T501	1-426-938-11	TRANSFORMER, DC/DC CONVERTER	

Ref. No.	Part No.	Description	Remark
		FP-249 FLEXIBLE BOARD *********************	(Ref. No. 8,000 Series)
	1-658-214-11	FP-356 FLEXIBLE BOARD	
	3-965-551-01	HOLDER (S), SENSOR	
	3-965-552-01	HOLDER (T), SENSOR	
		< HALL ELEMENT >	
H001	8-719-033-37	ELEMENT, HALL HW-105C	
H002	8-719-033-37	ELEMENT, HALL HW-105C	
		< TRANSISTOR >	
Q001	8-729-907-25	TRANSISTOR PT4850F	
Q002	8-729-907-25	TRANSISTOR PT4850F	
		< SWITCH >	
S001	1-692-614-11	SWITCH, PUSH (3 KEY)	(Hi8 MP, ME/MP, REC PROOF)
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	

Ref. No.	Part No.	Description	Remark
	1-658-213-11	FP-355 FLEXIBLE BOARD ********************	(Ref. No. 8,000 Series)
		< DIODE >	
D001	8-719-988-42	DIODE GL453S	

Ref. No.	Part No.	Description	Remark
	A-7073-096-A	LB-50 BOARD, COMPLETE (TR920E/TR930) *****************************	(Ref. No. 1,000 Series)
		< CAPACITOR >	
C801	1-104-917-11	TANTAL. CHIP 15uF 20% 20V	
C802	1-115-363-11	CERAMIC CHIP 10uF 10V	
C803	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C804	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C805	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C806	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
* CN801	1-573-333-21	CONNECTOR, BOARD TO BOARD 10P	
		< COIL >	
L801	1-412-030-11	INDUCTOR CHIP 22uH	
L802	1-412-029-11	INDUCTOR CHIP 10uH	
		< FLUORECENT INDICATOR >	
⚠ND801	1-517-414-21	FLUORESCENT TUBE (0.55 INCH)	
		< TRANSISTOR >	
Q801	8-729-039-24	TRANSISTOR FX216-TL1	
		< RESISTOR >	
R802	1-216-839-11	METAL CHIP 33K 5% 1/16W	
		< TRANSFORMER >	
⚠T801	1-429-756-21	TRANSFORMER, INVERTER	

Ref. No.	Part No.	Description	Remark
	A-7073-173-A	LC-56 (HCI) BOARD, COMPLETE ***************************	(Ref. No. 6,000 Series)
		< BUZZER >	
BZ151	1-529-107-11	BUZZER, PIEZOELECTRIC	
		< CAPACITOR >	
C151	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
		< CONNECTOR >	
CN151	1-764-707-21	CONNECTOR, FFC/FPC (LIF) 8P	
CN152	1-766-350-21	CONNECTOR, FFC/EPC (ZIF) 20P	
		< IC >	
IC151	8-759-073-95	IC SED1510FOC	
		< RESISTOR >	
R151	1-216-864-11	METAL CHIP 0 5% 1/16W	
R153	1-216-855-11	METAL CHIP 680K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
	A-7073-168-A	MI-29 (HP) BOARD, COMPLETE **************************	(TR820E/TR825E/TR920E)
	A-7073-172-A	MI-29 (HCI) BOARD, COMPLETE (TR930) **********************************	(Ref. No. 4,000 Series)
		< CAPACITOR >	
C303	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C304	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C305	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
C306	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C307	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C308	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C309	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C310	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C311	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C312	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C313	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C314	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C315	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C316	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C317	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C318	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C319	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C320	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C321	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C322	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C323	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C324	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C325	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C326	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C327	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C328	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C329	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C330	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C331	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C332	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C333	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C334	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C335	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C336	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C337	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C338	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C339	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C340	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C341	1-164-346-11	CERAMIC CHIP	1uF		16V
C342	1-164-346-11	CERAMIC CHIP	1uF		16V
C343	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C345	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C346	1-164-346-11	CERAMIC CHIP	1uF		16V
C347	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C361	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C362	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V (TR930)
C363	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TR930)
C365	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V (TR930)
C366	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C367	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V (TR930)
C368	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V (TR930)
C369	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C370	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TR930)

Ref. No.	Part No.	Description			Remark
C371	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V (TR930)
C372	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C373	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V (TR930)
C374	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C375	1-164-668-11	CERAMIC CHIP	510PF	5%	50V (TR930)
C376	1-135-091-00	TANTALUM CHIP	1uF	20%	16V (TR930)
C377	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V (TR930)
C378	1-135-091-00	TANTALUM CHIP	1uF	20%	16V (TR930)
C379	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C380	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C381	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C382	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V (TR930)
C383	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C385	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C386	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C387	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (TR930)
C388	1-104-908-11	TANTAL. CHIP	47uF	20%	4V (TR930)
C389	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V (TR930)
C390	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V (TR930)
C391	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C392	1-162-947-11	CERAMIC CHIP	33PF	5%	50V (TR930)
C393	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR930)
C395	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C396	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
		< CONNECTOR >			
* CN301	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD)2P			
* CN302	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD)2P			
CN303	1-779-337-21	CONNECTOR, FFC/FPC 26P			
		< DIODE >			
D303	8-719-404-49	DIODE	MA111		
D304	8-719-061-82	DIODE	TLSU1002		
D362	8-749-060-65	DIODE	DCC3810 (TR930)		
D363	8-719-061-86	DIODE	DCR2810 (TR930)		

Ref. No.	Part No.	Description			Remark
		< FUSE >			
⚠F361	1-533-844-21	FUSE, MICRO 200mA 63V (PU200)(TR930)			
		< IC >			
IC301	8-759-248-31	IC BA7780KV-E2			
IC302	8-749-012-83	IC RS-180-T			
IC361	8-759-455-09	IC LA9510W-TBM (TR930)			
		< JACK >			
J301	1-691-737-11	JACK, SMALL TYPE (MIC)			
		< COIL >			
L362	1-412-948-11	INDUCTOR	5.6uH (TR930)		
L363	1-414-078-11	INDUCTOR	10uH (TR930)		
L364	1-412-957-11	INDUCTOR	33uH (TR930)		
L365	1-412-957-11	INDUCTOR	33uH (TR930)		
		< TRANSISTOR >			
Q362	8-729-122-63	TRANSISTOR	2SA1226 (TR930)		
Q364	8-729-425-50	TRANSISTOR	2SB1462Q (TR930)		
Q365	8-729-140-75	TRANSISTOR	2SD999-CLCK (TR930)		
		< RESISTOR >			
R301	1-216-864-11	METAL CHIP	0	5%	1/16W
R302	1-216-864-11	METAL CHIP	0	5%	1/16W
R303	1-216-864-11	METAL CHIP	0	5%	1/16W
R306	1-216-835-11	METAL CHIP	15K	5%	1/16W
R307	1-216-835-11	METAL CHIP	15K	5%	1/16W
R308	1-216-839-11	METAL CHIP	33K	5%	1/16W
R309	1-216-836-11	METAL CHIP	18K	5%	1/16W
R310	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R311	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R312	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R313	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R314	1-216-821-11	METAL CHIP	1K	5%	1/16W
R315	1-216-821-11	METAL CHIP	1K	5%	1/16W
R316	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R317	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W
R319	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R320	1-216-833-11	METAL CHIP	10K	5%	1/16W
R321	1-216-864-11	METAL CHIP	0	5%	1/16W
R322	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R323	1-216-833-11	METAL CHIP	10K	5%	1/16W
R324	1-216-836-11	METAL CHIP	18K	5%	1/16W
R325	1-216-864-11	METAL CHIP	0	5%	1/16W
R326	1-216-833-11	METAL CHIP	10K	5%	1/16W
R327	1-216-836-11	METAL CHIP	18K	5%	1/16W
R328	1-216-839-11	METAL CHIP	33K	5%	1/16W
R329	1-216-839-11	METAL CHIP	33K	5%	1/16W
R330	1-216-835-11	METAL CHIP	15K	5%	1/16W
R331	1-216-835-11	METAL CHIP	15K	5%	1/16W
R332	1-216-835-11	METAL CHIP	15K	5%	1/16W
R333	1-216-835-11	METAL CHIP	15K	5%	1/16W
R334	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R336	1-216-839-11	METAL CHIP	33K	5%	1/16W
R337	1-216-834-11	METAL CHIP	12K	5%	1/16W
R339	1-216-839-11	METAL CHIP	33K	5%	1/16W
R341	1-216-818-11	METAL CHIP	560	5%	1/16W
R342	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R343	1-216-824-11	METAL CHIP	1.8k	5%	1/16W
R345	1-216-805-11	METAL CHIP	47	5%	1/16W
R361	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR930)
R363	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR930)
R365	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R366	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R367	1-216-853-11	METAL CHIP	470K	5%	1/16W (TR930)
R369	1-218-879-11	METAL GLAZE	22K	0.50%	1/16W (TR930)
R370	1-216-815-11	METAL CHIP	330	5%	1/16W (TR930)
R371	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR930)
R373	1-216-817-11	METAL CHIP	470	5%	1/16W (TR930)
R375	1-216-818-11	METAL CHIP	560	5%	1/16W (TR930)
R376	1-216-831-11	METAL CHIP	6.8K	5%	1/16W (TR930)
R377	1-216-817-11	METAL CHIP	470	5%	1/16W (TR930)
R378	1-216-817-11	METAL CHIP	470	5%	1/16W (TR930)
R382	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R384	1-216-817-11	METAL CHIP	470	5%	1/16W (TR930)
R385	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (TR930)
R386	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R387	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR930)
R389	1-216-311-00	METAL CHIP	6.8	5%	1/10W (TR930)
R390	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R392	1-216-847-11	METAL CHIP	150K	5%	1/16W (TR930)
R393	1-216-847-11	METAL CHIP	150K	5%	1/16W (TR930)
R397	1-216-864-11	METAL CHIP	0	5%	1/16W (TR930)
R398	1-216-302-00	METAL CHIP	2.7	5%	1/10W (TR930)
R399	1-216-864-11	METAL CHIP	0	5%	1/16W (TR930)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
	A-7073-167-A	MM-35 (HDP) BOARD, COMPLETE (TR825E)	
		************************************	
	A-7073-174-A	MM-35 (HCI) BOARD, COMPLETE	
		***************************	
			(TR820E/TR920E/TR930) (Ref. No. 2,000 Series)
		< CAPACITOR >	
C701	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V (TR825E)
C702	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (TR825E)
C703	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (TR825E)
C704	1-162-923-11	CERAMIC CHIP 47PF 5%	50V (TR825E)
C705	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (TR825E)
C706	1-162-923-11	CERAMIC CHIP 47PF 5%	50V (TR825E)
C707	1-162-915-11	CERAMIC CHIP 10PF 0.5PF	50V (TR825E)
C708	1-162-925-11	CERAMIC CHIP 68PF 5%	50V (TR825E)
C709	1-164-156-11	CERAMIC CHIP 0.1uF	25V (TR825E)
C710	1-135-201-11	TANTALUM CHIP 10uF 20%	4V (TR825E)
C711	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (TR825E)
C712	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (TR825E)
C713	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V (TR825E)
C714	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V (TR825E)
C715	1-164-156-11	CERAMIC CHIP 0.1uF	25V (TR825E)
C719	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (TR825E)
C720	1-135-201-11	TANTALUM CHIP 10uF 20%	4V (TR825E)
		< CONNECTOR >	
CN701	1-778-080-11	CONNECTOR, BOARD TO BOARD 70P (TR825E)	
CN702	1-766-677-21	CONNECTOR, FFC/FPC 16P	
CN703	1-764-709-11	CONNECTOR, FFC/FPC 10P	
CN704	1-766-342-21	CONNECTOR, FFC/FPC 12P	
		< DIODE >	
D701	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D702	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D703	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D705	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D706	8-719-062-16	DIODE 01ZA8.2(TPL3)	
		< FERRITE BEAD >	
FB702	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB711	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB712	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB713	1-414-228-11	INDUCTOR, FERRITE BEAD	

Ref. No.	Part No.	Description	Remark
		< IC >	
IC701	8-759-421-52	IC MB87B110CPFV-G-BND-ER (TR825E)	
		< COIL >	
L701	1-414-754-11	INDUCTOR 10uH (TR825E)	
L702	1-412-950-11	INDUCTOR 8.2uH (TR825E)	
L703	1-414-754-11	INDUCTOR 10uH (TR825E)	
L704	1-414-754-11	INDUCTOR 10uH (TR825E)	
L705	1-410-658-31	INDUCTOR CHIP 220uH (TR825E)	
		< TRANSISTOR >	
Q701	8-729-425-64	TRANSISTOR 2SD2216Q (TR825E)	
Q702	8-729-425-64	TRANSISTOR 2SD2216Q (TR825E)	
Q703	8-729-425-64	TRANSISTOR 2SD2216Q (TR825E)	
Q704	8-729-037-59	TRANSISTOR UN9111J-(TX).SO (TR825E)	
Q705	8-729-425-64	TRANSISTOR 2SD2216Q (TR825E)	
Q706	8-729-429-18	TRANSISTOR UN9213	
Q707	8-729-425-50	TRANSISTOR 2SB1462Q	
		< RESISTOR >	
R701	1-216-839-11	METAL CHIP 33K 5%	1/16W (TR825E)
R702	1-216-838-11	METAL CHIP 27K 5%	1/16W (TR825E)
R703	1-216-821-11	METAL CHIP 1K 5%	1/16W (TR825E)
R704	1-216-819-11	METAL CHIP 680 5%	1/16W (TR825E)
R705	1-216-812-11	METAL CHIP 180 5%	1/16W (TR825E)
R706	1-216-821-11	METAL CHIP 1K 5%	1/16W (TR825E)
R707	1-216-824-11	METAL CHIP 1.8K 5%	1/16W (TR825E)
R708	1-216-816-11	METAL CHIP 390 5%	1/16W (TR825E)
R709	1-216-821-11	METAL CHIP 1K 5%	1/16W (TR825E)
R710	1-216-826-11	METAL CHIP 2.7K 5%	1/16W (TR825E)
R711	1-216-820-11	METAL CHIP 820 5%	1/16W (TR825E)
R712	1-216-826-11	METAL CHIP 2.7K 5%	1/16W (TR825E)
R713	1-216-825-11	METAL CHIP 2.2K 5%	1/16W (TR825E)
R714	1-216-833-11	METAL CHIP 10K 5%	1/16W (TR825E)
R715	1-216-829-11	METAL CHIP 4.7K 5%	1/16W (TR825E)
R716	1-216-819-11	METAL CHIP 680 5%	1/16W (TR825E)
R719	1-216-821-11	METAL CHIP 1K 5%	1/16W (TR825E)
R720	1-216-816-11	METAL CHIP 390 5%	1/16W (TR825E)
R721	1-216-817-11	METAL CHIP 470 5%	1/16W (TR825E)
R722	1-216-821-11	METAL CHIP 1K 5%	1/16W (TR825E)

Ref. No.	Part No.	Description			Remark
R723	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R724	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R725	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR825E)
R726	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R727	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R743	1-216-821-11	METAL CHIP	1K	5%	1/16W
R744	1-216-821-11	METAL CHIP	1K	5%	1/16W
R745	1-216-821-11	METAL CHIP	1K	5%	1/16W
R746	1-216-821-11	METAL CHIP	1K	5%	1/16W
R747	1-216-821-11	METAL CHIP	1K	5%	1/16W
R748	1-216-821-11	METAL CHIP	1K	5%	1/16W
R749	1-216-821-11	METAL CHIP	1K	5%	1/16W
R750	1-216-819-11	METAL CHIP	680	5%	1/16W
R751	1-216-841-11	METAL CHIP	47K	5%	1/16W
R755	1-216-821-11	METAL CHIP	1K	5%	1/16W
R756	1-216-864-11	METAL CHIP	0	5%	1/16W

A-7073-101-A PJ-80 (VHCRJ) BOARD, COMPLETE (TR920E)
****

A-7073-121-A PJ-80 (VHCRP) BOARD, COMPLETE
****
(TR820E/TR825E)

A-7073-176-A PJ-80 (HCI) BOARD, COMPLETE (TR930)
****
(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C101	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E)
C102	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E)
C103	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E)
C104	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E)
C105	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C106	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E/TR930)
C107	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E)
C108	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E/TR930)
C109	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E/TR930)
C110	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E)
C111	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR820E/TR825E/TR930)

< CONNECTOR >

Ref. No.	Part No.	Description
CN101	1-764-516-21	CONNECTOR, FFC/FPC (ZIF) 6P
CN102	1-764-526-11	CONNECTOR, FFC/FPC (ZIF) 18P

< DIODE >

Ref. No.	Part No.	Description	
D101	8-719-062-16	DIODE	01ZA8.2(TPL3)
D102	8-719-062-16	DIODE	01ZA8.2(TPL3)
D103	8-719-062-16	DIODE	01ZA8.2(TPL3)
D104	8-719-062-16	DIODE	01ZA8.2(TPL3)
D105	8-719-062-16	DIODE	01ZA8.2(TPL3)
D106	8-719-062-16	DIODE	01ZA8.2(TPL3)
D107	8-719-062-16	DIODE	01ZA8.2(TPL3)
D108	8-719-420-14	DIODE	MA8082-M

< JACK >

Ref. No.	Part No.	Description
J101	1-537-747-21	TERMINAL BOARD (S VIDEO, VIDEO, AUDIO, RFU DC OUT)

< COIL >

Ref. No.	Part No.	Description	
L101	1-414-072-11	INDUCTOR	1uH
L102	1-412-963-11	INDUCTOR	100uH (TR820E/TR825E)
L103	1-412-963-11	INDUCTOR	100uH (TR820E/TR825E)
L104	1-412-963-11	INDUCTOR	100uH (TR820E/TR825E)

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q101	8-729-101-07	TRANSISTOR	2SB798-DL
Q102	8-729-425-64	TRANSISTOR	2SD2216Q

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R101	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R102	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R103	1-216-295-91	CONDUCTOR, CHIP (2012)(TR920E)			
R103	1-412-963-11	INDUCTOR	100UH		(TR820E/TR825E/TR930)
R104	1-216-138-00	METAL CHIP	3.3	5%	1/8W
R105	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R106	1-216-295-91	CONDUCTOR, CHIP (2012)(TR920E)			
R106	1-412-963-11	INDUCTOR	100UH		(TR820E/TR825E/TR930)
R107	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R108	1-216-820-11	METAL CHIP	820	5%	1/16W
R109	1-216-836-11	METAL CHIP	18K	5%	1/16W
R110	1-216-864-11	METAL CHIP	0	5%	1/16W
R111	1-216-864-11	METAL CHIP	0	5%	1/16W
R112	1-216-864-11	METAL CHIP	0	5%	1/16W
R120	1-216-821-11	METAL CHIP	1K	5%	1/16W
R121	1-216-821-11	METAL CHIP	1K	5%	1/16W

A-7073-175-A SE-61 (HCI) BOARD, COMPLETE
****
(Ref. No. 1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C451	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C452	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C453	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C454	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V

Ref. No.	Part No.	Description			Remark
C455	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C456	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C457	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C458	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C459	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C460	1-128-257-21	ELECT CHIP	33uF	20%	10V
C461	1-128-257-21	ELECT CHIP	33uF	20%	10V
C462	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C467	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C468	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C469	1-115-156-11	CERAMIC CHIP	1uF		10V
		< CONNECTOR >			
CN451	1-766-673-21	CONNECTOR, FFC/FPC 12P			
		< FERRITE BEAD >			
FB451	1-414-228-11	INDUCTOR, FERRITE BEAD			
		< IC >			
IC451	8-759-080-34	IC TA75W01FU			
IC453	8-759-062-66	IC TC7S66F			
IC454	8-759-062-66	IC TC7S66F			
IC455	8-759-388-62	IC NJU7062M(TE2)			
		< COIL >			
L452	1-414-754-11	INDUCTOR	10uH		
		< RESISTOR >			
R451	1-216-837-11	METAL CHIP	22K	5%	1/16W
R452	1-216-837-11	METAL CHIP	22K	5%	1/16W
R453	1-216-837-11	METAL CHIP	22K	5%	1/16W
R454	1-216-837-11	METAL CHIP	22K	5%	1/16W
R455	1-216-837-11	METAL CHIP	22K	5%	1/16W
R456	1-216-837-11	METAL CHIP	22K	5%	1/16W
R457	1-216-803-11	METAL CHIP	33	5%	1/16W
R458	1-216-833-11	METAL CHIP	10K	5%	1/16W
R459	1-216-833-11	METAL CHIP	10K	5%	1/16W
R460	1-216-853-11	METAL CHIP	470K	5%	1/16W
R461	1-216-853-11	METAL CHIP	470K	5%	1/16W
R464	1-216-833-11	METAL CHIP	10K	5%	1/16W
R465	1-216-857-11	METAL CHIP	1M	5%	1/16W
R466	1-216-857-11	METAL CHIP	1M	5%	1/16W
R467	1-216-833-11	METAL CHIP	10K	5%	1/16W
R468	1-216-835-11	METAL CHIP	15K	5%	1/16W
		< SENSOR >			
SE451	1-810-725-71	SENSOR, ANGULAR VELOCITY (YAW)			
SE452	1-810-725-81	SENSOR, ANGULAR VELOCITY (PITCH)			

A-7093-225-A VC-190 (HDP) BOARD, COMPLETE (TR825E)
****

A-7093-227-A VC-190 (HP) BOARD, COMPLETE (TR820E)
****

A-7093-228-A VC-190 (HCI) BOARD, COMPLETE (TR930)
****

A-7093-264-A VC-190 (HCPE) BOARD, COMPLETE (TR920E)
****

(Ref. No. 10,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C251	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C252	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C253	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C254	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C255	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C256	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C258	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C263	1-115-156-11	CERAMIC CHIP	1uF		10V
C266	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C267	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C268	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C269	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C271	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C274	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C276	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1005	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1007	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1008	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
C1009	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C1010	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
C1011	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C1012	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1013	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1014	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C1015	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1016	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1017	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR820E/TR825E/TR920E)
C1018	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR820E/TR825E/TR920E)
C1019	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C1020	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1021	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C1022	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C1023	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C1024	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C1025	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1026	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1027	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1028	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1029	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C1034	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1035	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C1036	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1037	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1039	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1040	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1041	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1042	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1043	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TR820E/TR920E/TR930)
C1044	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR930)
C1045	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C1046	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR930)
C1051	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1052	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR825E)
C1053	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1054	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1056	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TR820E/TR920E/TR930)
C1058	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1060	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1063	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1065	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1068	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1070	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C1071	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1073	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C1074	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C1076	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C1077	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C1078	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C1080	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1081	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C1083	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C1084	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C1085	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C1086	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1087	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
					(TR930)
C1087	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
					(TR820E/TR825E/TR920E)
C1089	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1090	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
					(TR930)
C1090	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
					(TR820E/TR825E/TR920E)
C1091	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C1092	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C1093	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C1094	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1095	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
					(TR820E/TR825E/TR920E)
C1095	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
					(TR930)
C1096	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1097	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1140	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C1141	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1144	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1147	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1149	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1150	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1152	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1153	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1154	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1155	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1156	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1158	1-115-156-11	CERAMIC CHIP	1uF		10V
C1160	1-115-156-11	CERAMIC CHIP	1uF		10V
C1164	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1165	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1166	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1167	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1173	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
					(TR930)
C1201	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1202	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C1203	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C1204	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C1205	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1206	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1209	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1210	1-115-156-11	CERAMIC CHIP	1uF		10V
C1212	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1213	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1215	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1216	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1217	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1218	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1220	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C1222	1-115-156-11	CERAMIC CHIP	1uF		10V
C1223	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1224	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1227	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1228	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1229	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1230	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1231	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C1232	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C1233	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1234	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1236	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1237	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1240	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1280	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1282	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR920E/TR930)
C1283	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C1285	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1301	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1302	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C1306	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C1307	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1308	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C1309	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C1310	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C1311	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1312	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1313	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1314	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C1315	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1317	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1318	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1319	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1320	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR920E/TR930)
C1322	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V (TR920E/TR930)
C1323	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (TR920E/TR930)
C1324	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR920E/TR930)
C1326	1-162-927-11	CERAMIC CHIP	100PF	5%	50V (TR920E/TR930)
C1327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR920E/TR930)
C1328	1-162-919-11	CERAMIC CHIP	22PF	5%	50V (TR920E/TR930)
C1330	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1331	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C1332	1-126-246-11	ELECT CHIP	220uF	20%	4V
C1333	1-126-246-11	ELECT CHIP	220uF	20%	4V
C1334	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C1335	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1336	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1337	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1339	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1340	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1342	1-164-217-11	CERAMIC CHIP	150PF	5%	50V (TR930)
C1342	1-162-928-11	CERAMIC CHIP	120PF	5%	50V (TR920E)
C1343	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR930)
C1343	1-162-920-11	CERAMIC CHIP	27PF	5%	50V (TR920E)
C1344	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR930)
C1350	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (TR930)
C1351	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1352	1-115-156-11	CERAMIC CHIP	1uF		10V (TR930)
C1353	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR930)
C1370	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1403	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C1404	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C1405	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V

Ref. No.	Part No.	Description			Remark
C1406	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1407	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1409	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C1410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1411	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C1412	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1415	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C1416	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C1417	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C1422	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1423	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1424	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1425	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C1426	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C1429	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1430	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1431	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C1432	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C1433	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1434	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1435	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C1437	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1439	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C1463	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1465	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1466	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1468	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1475	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1476	1-216-841-11	METAL CHIP	47K	5%	1/16W
C1477	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1481	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1486	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C1487	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C1488	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1489	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1490	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1492	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C1601	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C1602	1-115-156-11	CERAMIC CHIP	1uF		10V
C1604	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C1605	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1608	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1615	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1616	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V
C1617	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1618	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1619	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1620	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1621	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1622	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1624	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1625	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1626	1-164-346-11	CERAMIC CHIP	1uF		16V
C1628	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1629	1-115-156-11	CERAMIC CHIP	1uF		10V
C1630	1-162-919-11	CERAMIC CHIP	22PF	5%	50V

Ref. No.	Part No.	Description			Remark
C1631	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C1635	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1637	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1638	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1639	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1640	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1641	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1642	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C1643	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1644	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1645	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C1646	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C1647	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1701	1-115-156-11	CERAMIC CHIP	1uF		10V
C1702	1-115-156-11	CERAMIC CHIP	1uF		10V
C1752	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1753	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1754	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1755	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1756	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1757	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C1758	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C1760	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1761	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1762	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1763	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V
C1764	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1765	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1767	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1768	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1769	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1770	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1771	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1772	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1776	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1777	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1779	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1851	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1852	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1853	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1854	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1855	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1856	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1857	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1858	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1859	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1860	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1861	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1862	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1863	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1864	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C1865	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1866	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1867	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1868	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1869	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1870	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V

Ref. No.	Part No.	Description			Remark
C1871	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1872	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1873	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1874	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1875	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1876	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1877	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1878	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1879	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1880	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1882	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1884	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1886	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1887	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1888	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1951	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C1952	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1953	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1954	1-115-156-11	CERAMIC CHIP	1uF		10V
C1955	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1957	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1958	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1959	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1960	1-115-156-11	CERAMIC CHIP	1uF		10V
C1965	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1968	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1971	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1974	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1976	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C1978	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1980	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1981	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1982	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C1986	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1987	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1989	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1990	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1991	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C2051	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V (TR920E/TR930)
C2052	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)
C2054	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)
C2055	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)
C2056	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)
C2057	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)
		< CONNECTOR >			
CN101	1-766-677-21	CONNECTOR, FFC/FPC 16P			
CN102	1-774-639-21	CONNECTOR, FFC/FPC 15P			
CN103	1-766-673-21	CONNECTOR, FFC/FPC 12P			
CN104	1-766-340-21	CONNECTOR, FFC/FPC 10P			
CN105	1-766-619-11	1ONNECTOR, FFC/FPC 8P			
CN106	1-691-542-21	CONNECTOR, BOARD TO BOARD 48P			

Ref. No.	Part No.	Description	Remark
CN111	1-779-334-11	CONNECTOR, FFC/FPC 20P	
CN112	1-779-332-11	CONNECTOR, FFC/FPC 16P	
CN113	1-691-361-11	CONNECTOR, FFC/FPC (ZIF) 23P	
CN202	1-774-637-11	CONNECTOR, FFC/FPC 13P	
CN204	1-778-075-11	CONNECTOR, BOARD TO BOARD 70P (TR825E)	
CN205	1-766-340-21	CONNECTOR, FFC/FPC 10P (TR825E/TR920E/TR930)	
CN207	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P	
CN208	1-573-935-11	CONNECTOR, FFC/FPC (ZIF) 26P	
CN1350	1-766-348-21	CONNECTOR, FFC/FPC 18P	
CN1951	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P	
CN1953	1-779-338-21	CONNECTOR, FFC/FPC 28P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D1201	8-719-055-86	DIODE KV1470TL1-3	
D1202	8-719-055-86	DIODE KV1470TL1-3	
D1305	8-719-404-49	DIODE MA111 (TR930)	
D1306	8-719-404-49	DIODE MA111 (TR930)	
D1350	8-719-404-49	DIODE MA111 (TR820E/TR825E)	
D1351	8-719-404-49	DIODE MA111 (TR820E/TR825E)	
D1352	8-719-404-49	DIODE MA111 (TR820E/TR825E)	
D1353	8-719-062-16	DIODE 01ZA8.2(TPL3)(TR825E/TR920ETR930)	
D1601	8-719-404-49	DIODE MA111	
D1602	8-713-102-28	DIODE 1T379-04-T8A	
D1951	8-719-404-49	DIODE MA111	
D1952	8-719-404-49	DIODE MA111	
D1953	8-719-404-49	DIODE MA111	
D1954	8-719-049-09	DIODE 1SS367-T3SONY	
D1955	8-719-049-09	DIODE 1SS367-T3SONY	
D1956	8-719-421-27	DIODE MA728	
D1957	8-719-404-49	DIODE MA111	
D1958	8-719-049-09	DIODE 1SS367-T3SONY	
D2051	8-719-404-49	DIODE MA111 (TR920E/TR930)	
D2052	8-719-404-49	DIODE MA111 (TR920E/TR930)	

< FERRITE BEAD >

Ref. No.	Part No.	Description	Remark
FB251	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB1151	1-500-284-21	INDUCTOR, FERRITE BEAD	
FB1601	1-414-228-11	INDUCTOR, FERRITE BEAD (TR930)	
FB1602	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB1603	1-500-284-21	INDUCTOR, FERRITE BEAD	
FB1604	1-500-284-21	INDUCTOR, FERRITE BEAD	
FB1605	1-500-284-21	INDUCTOR, FERRITE BEAD	
FB1701	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB1702	1-414-228-11	INDUCTOR, FERRITE BEAD	

< IC >

Ref. No.	Part No.	Description	Remark
IC101	8-752-071-15	IC CXA1702AR-T6	
IC102	8-759-447-79	IC MB87B121PFV-G-BND-ER	
IC103	8-759-438-69	IC MB40C218PFQ-G-BND-ER	
IC104	8-759-454-36	IC uPD6466GS-622-GLG-E2	
IC105	8-759-457-06	IC M65510FP-600D	
IC106	8-759-457-05	IC HG51D306TETL	
IC108	8-759-169-02	IC MB88344BPFV-G-BND-ER	
IC109	8-752-079-31	IC CXA1737R-T6	
IC114	8-752-386-05	IC CXD3119R-T6	
IC115	8-759-460-40	IC HG51D318TETL	
IC116	8-759-445-94	IC AK6480AM-E2	
IC117	8-752-879-54	IC CXP913040-001R-T6	
IC119	8-759-058-62	IC TC7S08FU(TE85R)	
IC120	8-759-356-30	IC XR1083ACQ-E2	
IC121	8-759-327-67	IC LB1950V-TLM	
IC122	8-759-327-61	IC LB8112V-TLM (TR930)	
IC122	8-759-327-62	IC TA8482FN-EL (TR820E/TR825E/TR920E)	
IC129	8-752-078-82	IC CXA2030R-T6	
IC130	8-759-058-58	IC TC7S04FU(TE85R)(TR920E/TR930)	
IC202	8-752-384-74	IC CXD2486R-T4	
IC203	8-759-462-43	IC AD9800JCSTRL	
IC251	8-759-075-97	IC LM358PW	
IC252	8-759-365-18	IC uPD16833G3-E2	
IC253	8-759-337-41	IC NJM2902V(TE2)	
IC255	8-752-377-38	IC CXD2430N	
IC800	8-752-384-33	IC CXD3121R (TR920E/TR930)	
IC1951	8-759-298-10	IC S-8423NFS-T2	
IC1952	8-759-454-37	IC S579201PZ-TEB	
IC1995	8-759-059-05	IC TL1596CPW	

< COIL >

Ref. No.	Part No.	Description	Remark
L252	1-414-754-11	INDUCTOR 10uH	
L253	1-414-398-11	INDUCTOR 10uH	
L1002	1-414-406-11	INDUCTOR 220uH	
L1003	1-412-951-11	INDUCTOR 10uH	
L1004	1-414-406-11	INDUCTOR 220uH	
L1005	1-414-398-11	INDUCTOR 10uH	
L1006	1-412-948-11	INDUCTOR 5.6uH	
L1007	1-410-656-11	INDUCTOR CHIP 150uH	
L1008	1-412-963-11	INDUCTOR 100uH	
L1009	1-412-282-41	INDUCTOR 470uH	
L1010	1-412-957-11	INDUCTOR 33uH	
L1011	1-412-280-31	INDUCTOR 330uH	
L1012	1-410-657-21	INDUCTOR CHIP 180uH	
L1013	1-410-656-11	INDUCTOR CHIP 150uH	
L1014	1-412-956-21	INDUCTOR 27uH	
L1015	1-412-280-31	INDUCTOR 330uH	
L1017	1-412-949-21	INDUCTOR 6.8uH	
L1018	1-412-951-11	INDUCTOR 10uH	
L1019	1-412-944-11	INDUCTOR 2.7uH	
L1020	1-414-754-11	INDUCTOR 10uH	
L1141	1-414-754-11	INDUCTOR 10uH	
L1151	1-414-754-11	INDUCTOR 10uH	
L1154	1-414-754-11	INDUCTOR 10uH	
L1201	1-414-754-11	INDUCTOR 10uH	
L1202	1-414-754-11	INDUCTOR 10uH	
L1203	1-414-754-11	INDUCTOR 10uH	
L1204	1-412-945-11	INDUCTOR 3.3uH	
L1206	1-414-754-11	INDUCTOR 10uH	
L1207	1-414-078-11	INDUCTOR 10uH	
L1209	1-414-754-11	INDUCTOR 10uH	
L1220	1-412-955-11	INDUCTOR 22uH	
L1301	1-414-754-11	INDUCTOR 10uH	
L1303	1-412-939-11	INDUCTOR 1uH (TR930)	
L1303	1-412-937-11	INDUCTOR 0.68uH (TR920E)	
L1305	1-414-754-11	INDUCTOR 10uH	
L1306	1-414-754-11	INDUCTOR 10uH	

Ref. No.	Part No.	Description				Remark
L1307	1-414-754-11	INDUCTOR	10uH			
L1308	1-412-959-11	INDUCTOR	47uH			(TR920E/TR930)
L1310	1-414-754-11	INDUCTOR	10uH			
L1603	1-414-398-11	INDUCTOR	10uH			
L1604	1-412-955-11	INDUCTOR	22uH			
L1751	1-414-754-11	INDUCTOR	10uH			
L1752	1-414-754-11	INDUCTOR	10uH			
L1753	1-414-754-11	INDUCTOR	10uH			
L1754	1-412-961-11	INDUCTOR	68uH			
L1870	1-414-396-21	INDUCTOR	4.7uH			
L1951	1-414-754-11	INDUCTOR	10uH			
L2051	1-414-754-11	INDUCTOR	10uH			(TR920E/TR930)
		< TRANSISTOR >				
Q251	8-729-425-64	TRANSISTOR	2SD2216Q			
Q252	8-729-425-64	TRANSISTOR	2SD2216Q			
Q253	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1001	8-729-031-69	TRANSISTOR	2SA1965-TL			
Q1002	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1003	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1004	8-729-031-69	TRANSISTOR	2SA1965-TL			(TR930)
Q1005	8-729-031-69	TRANSISTOR	2SA1965-TL			(TR930)
Q1006	8-729-031-69	TRANSISTOR	2SA1965-TL			(TR930)
Q1007	8-729-031-69	TRANSISTOR	2SA1965-TL			(TR930)
Q1008	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1009	8-729-429-18	TRANSISTOR	UN9213			(TR930)
Q1010	8-729-429-18	TRANSISTOR	UN9213			(TR930)
Q1011	8-729-429-18	TRANSISTOR	UN9213			(TR930)
Q1012	8-729-429-18	TRANSISTOR	UN9213			(TR930)
Q1013	8-729-429-18	TRANSISTOR	UN9213			
Q1014	8-729-429-18	TRANSISTOR	UN9213			(TR825E)
Q1015	8-729-429-18	TRANSISTOR	UN9213			
Q1016	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1018	8-729-429-18	TRANSISTOR	UN9213			(TR820E/TR825E/TR920E)
Q1025	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1026	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1028	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1029	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1030	8-729-037-89	TRANSISTOR	2SC4627J-C(TX).SO			
Q1033	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1034	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1036	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1037	8-729-037-89	TRANSISTOR	2SC4627J-C(TX).SO			
Q1038	8-729-429-18	TRANSISTOR	UN9213			
Q1039	8-729-429-18	TRANSISTOR	UN9213			(TR930)
Q1040	8-729-429-18	TRANSISTOR	UN9213			
Q1041	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1043	8-729-807-86	TRANSISTOR	2SB1295-UL5			
Q1044	8-729-429-18	TRANSISTOR	UN9213			
Q1045	8-729-429-18	TRANSISTOR	UN9213			
Q1100	8-729-031-69	TRANSISTOR	2SA1965-TL			(TR930)
Q1135	8-729-037-89	TRANSISTOR	2SC4627J-C(TX).SO			
Q1136	8-729-429-18	TRANSISTOR	UN9213			
Q1138	8-729-429-18	TRANSISTOR	UN9213			(TR825E)
Q1139	8-729-031-69	TRANSISTOR	2SA1965-TL			
Q1140	8-729-429-18	TRANSISTOR	UN9213			
Q1141	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1150	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1201	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1202	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1203	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1220	8-729-429-18	TRANSISTOR	UN9213			
Q1221	8-729-429-18	TRANSISTOR	UN9213			(TR920E/TR930)
Q1305	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1350	8-729-428-88	TRANSISTOR	UN9113			
Q1351	8-729-425-64	TRANSISTOR	2SD2216Q			(TR930)
Q1352	8-729-015-66	TRANSISTOR	2SC4919			
Q1353	8-729-425-64	TRANSISTOR	2SD2216Q			(TR930)
Q1354	8-729-015-66	TRANSISTOR	2SC4919			
Q1355	8-729-015-66	TRANSISTOR	2SC4919			
Q1356	8-729-425-50	TRANSISTOR	2SB1462Q			(TR930)
Q1357	8-729-425-50	TRANSISTOR	2SB1462Q			(TR930)
Q1486	8-729-013-60	TRANSISTOR	RN1110-TE85L			
Q1487	8-729-013-60	TRANSISTOR	RN1110-TE85L			
Q1488	8-729-013-84	TRANSISTOR	RN2111-TE85L			
Q1489	8-729-013-60	TRANSISTOR	RN1110-TE85L			
Q1490	8-729-013-60	TRANSISTOR	RN1110-TE85L			
Q1491	8-729-429-50	TRANSISTOR	XP4312			
Q1492	8-729-429-50	TRANSISTOR	XP4312			
Q1493	8-729-428-88	TRANSISTOR	UN9113			
Q1494	8-729-429-18	TRANSISTOR	UN9213			
Q1601	8-729-429-18	TRANSISTOR	UN9213			
Q1602	8-729-428-88	TRANSISTOR	UN9113			
Q1603	8-729-428-88	TRANSISTOR	UN9113			
Q1604	8-729-429-18	TRANSISTOR	UN9213			
Q1605	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1751	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1851	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1852	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1854	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1951	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1952	8-729-040-77	TRANSISTOR	2SC5376-B(TE85L)			
Q1953	8-729-425-64	TRANSISTOR	2SD2216Q			
Q1954	8-729-032-00	TRANSISTOR	2SJ381-TD			
Q1955	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO			
Q1956	8-729-425-50	TRANSISTOR	2SB1462Q			
Q1958	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO			(TR820E/TR825E)
Q1959	8-729-032-62	TRANSISTOR	2SJ347-TE85L			
Q1963	8-729-024-48	TRANSISTOR	2SK1830-TE85L			
Q2051	8-729-425-50	TRANSISTOR	2SB1462Q			(TR920E/TR930)
Q2052	8-729-425-50	TRANSISTOR	2SB1462Q			(TR920E/TR930)
Q2053	8-729-425-50	TRANSISTOR	2SB1462Q			(TR920E/TR930)
		< RESISTOR >				
R251	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R252	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R253	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R254	1-216-001-00	METAL CHIP	10	5%	1/10W	
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R256	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R257	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R258	1-216-845-11	METAL CHIP	100K	5%	1/16W	

Ref. No.	Part No.	Description			Remark
R259	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R260	1-216-835-11	METAL CHIP	15K	5%	1/16W
R261	1-216-815-11	METAL CHIP	330	5%	1/16W
R262	1-216-837-11	METAL CHIP	22K	5%	1/16W
R263	1-216-848-11	METAL CHIP	180K	5%	1/16W
R264	1-216-848-11	METAL CHIP	180K	5%	1/16W
R265	1-216-836-11	METAL CHIP	18K	5%	1/16W
R266	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R267	1-216-821-11	METAL CHIP	1K	5%	1/16W
R269	1-216-841-11	METAL CHIP	47K	5%	1/16W
R270	1-216-843-11	METAL CHIP	68K	5%	1/16W
R271	1-216-845-11	METAL CHIP	100K	5%	1/16W
R272	1-216-848-11	METAL CHIP	180K	5%	1/16W
R273	1-216-843-11	METAL CHIP	68K	5%	1/16W
R275	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R294	1-216-864-11	METAL CHIP	0	5%	1/16W
R300	1-216-864-11	METAL CHIP	0	5%	1/16W
R302	1-216-864-11	METAL CHIP	0	5%	1/16W
R303	1-216-864-11	METAL CHIP	0	5%	1/16W
R705	1-216-843-11	METAL CHIP	68K	5%	1/16W (TR930)
R705	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR825/TR920E)
R706	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR825E)
R706	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR920E)
R706	1-216-842-11	METAL CHIP	56K	5%	1/16W (TR930)
R706	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E)
R1001	1-216-818-11	METAL CHIP	560	5%	1/16W
R1002	1-216-804-11	METAL CHIP	39	5%	1/16W (TR930)
R1002	1-216-803-11	METAL GLAZE	33	5%	1/16W (TR820E/TR825E/TR920E)
R1003	1-216-807-11	METAL CHIP	68	5%	1/16W
R1004	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1005	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1006	1-216-813-11	METAL CHIP	220	5%	1/16W
R1007	1-216-814-11	METAL CHIP	270	5%	1/16W
R1008	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR930)
R1009	1-216-839-11	METAL CHIP	33K	5%	1/16W
R1010	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1011	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR930)
R1012	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR930)
R1013	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR930)
R1014	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1015	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1016	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1017	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1018	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1019	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1020	1-216-838-11	METAL CHIP	27K	5%	1/16W
R1022	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1023	1-216-817-11	METAL CHIP	470	5%	1/16W
R1024	1-216-817-11	METAL CHIP	470	5%	1/16W
R1025	1-216-838-11	METAL CHIP	27K	5%	1/16W
R1027	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1028	1-216-838-11	METAL CHIP	27K	5%	1/16W
R1030	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1031	1-216-838-11	METAL CHIP	27K	5%	1/16W
R1033	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1034	1-216-817-11	METAL CHIP	470	5%	1/16W
R1035	1-216-817-11	METAL CHIP	470	5%	1/16W
R1037	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1038	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1039	1-216-797-11	METAL CHIP	10	5%	1/16W
R1040	1-218-875-11	METAL GLAZE	15K	0.50%	1/16W
R1041	1-216-836-11	METAL CHIP	18K	5%	1/16W
R1042	1-216-864-11	METAL CHIP	0	5%	1/16W
R1044	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR920E/TR930)
R1045	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1046	1-216-864-11	METAL CHIP	0	5%	1/16W
R1048	1-216-832-11	METAL CHIP	8.2K	5%	1/16W (TR820E/TR825E/TR920E)
R1051	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR820E/TR825E/TR920E)
R1051	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR930)
R1052	1-216-864-11	METAL CHIP	0	5%	1/16W (TR930)
R1053	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
R1054	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1057	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1057	1-216-830-11	METAL CHIP	5.6K	5%	1/16W (TR820E/TR825E/TR920E)
R1061	1-216-855-11	METAL CHIP	680K	5%	1/16W
R1062	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1076	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1081	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1082	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1083	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1084	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1085	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1086	1-216-818-11	METAL CHIP	560	5%	1/16W
R1087	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (TR820E/TR825E/TR920E)
R1087	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR930)
R1088	1-216-817-11	METAL CHIP	470	5%	1/16W
R1089	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1090	1-216-864-11	METAL CHIP	0	5%	1/16W
R1097	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1098	1-216-864-11	METAL CHIP	0	5%	1/16W
R1100	1-216-816-11	METAL CHIP	390	5%	1/16W
R1101	1-216-820-11	METAL CHIP	820	5%	1/16W

Ref. No.	Part No.	Description			Remark
R1103	1-216-815-11	METAL CHIP	330	5%	1/16W (TR930)
R1103	1-216-817-11	METAL CHIP	470	5%	1/16W (TR820E/TR825E/TR920E)
R1104	1-216-815-11	METAL CHIP	330	5%	1/16W (TR930)
R1104	1-216-817-11	METAL CHIP	470	5%	1/16W (TR820E/TR825E/TR920E)
R1105	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1106	1-216-816-11	METAL CHIP	390	5%	1/16W
R1107	1-216-817-11	METAL CHIP	470	5%	1/16W
R1110	1-216-805-11	METAL CHIP	47	5%	1/16W
R1111	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R1112	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1114	1-216-815-11	METAL CHIP	330	5%	1/16W
R1115	1-216-817-11	METAL CHIP	470	5%	1/16W
R1116	1-216-815-11	METAL CHIP	330	5%	1/16W (TR820E/TR825E/TR920E)
R1116	1-216-818-11	METAL CHIP	560	5%	1/16W (TR930)
R1117	1-216-815-11	METAL CHIP	330	5%	1/16W (TR930)
R1117	1-216-816-11	METAL CHIP	390	5%	1/16W (TR820E/TR825E/TR920E)
R1118	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1119	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1120	1-216-817-11	METAL CHIP	470	5%	1/16W
R1121	1-216-817-11	METAL CHIP	470	5%	1/16W
R1122	1-216-839-11	METAL CHIP	33K	5%	1/16W
R1123	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1124	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1125	1-216-815-11	METAL CHIP	330	5%	1/16W
R1128	1-216-811-11	METAL CHIP	150	5%	1/16W (TR930)
R1129	1-216-809-11	METAL CHIP	100	5%	1/16W
R1131	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1134	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (TR930)
R1134	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR820E/TR825E/TR920E)
R1135	1-216-814-11	METAL CHIP	270	5%	1/16W (TR930)
R1135	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
R1136	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1137	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1138	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1142	1-216-820-11	METAL CHIP	820	5%	1/16W (TR820E/TR825E/TR920E)
R1142	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR930)
R1143	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1144	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1146	1-216-818-11	METAL CHIP	560	5%	1/16W
R1147	1-216-820-11	METAL CHIP	820	5%	1/16W (TR930)
R1147	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
R1148	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1149	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1150	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1151	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1152	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1153	1-216-816-11	METAL CHIP	390	5%	1/16W
R1154	1-216-834-11	METAL CHIP	12K	5%	1/16W
R1155	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R1156	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1157	1-216-808-11	METAL CHIP	82	5%	1/16W
R1158	1-216-864-11	METAL CHIP	0	5%	1/16W
R1161	1-216-864-11	METAL CHIP	0	5%	1/16W
R1162	1-216-834-11	METAL CHIP	12K	5%	1/16W
R1163	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R1164	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR930)
R1165	1-216-809-11	METAL CHIP	100	5%	1/16W
R1213	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R1215	1-216-809-11	METAL CHIP	100	5%	1/16W
R1216	1-216-835-11	METAL CHIP	15K	5%	1/16W
R1217	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R1218	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1219	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R1221	1-216-818-11	METAL CHIP	560	5%	1/16W
R1222	1-216-820-11	METAL CHIP	820	5%	1/16W
R1223	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1225	1-216-819-11	METAL CHIP	680	5%	1/16W
R1227	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1228	1-216-835-11	METAL CHIP	15K	5%	1/16W
R1230	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1231	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1232	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1233	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1234	1-216-840-11	METAL CHIP	39K	5%	1/16W
R1236	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1237	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R1238	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1239	1-216-864-11	METAL CHIP	0	5%	1/16W
R1240	1-216-809-11	METAL CHIP	100	5%	1/16W (TR920E/TR930)
R1240	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR820E/TR825E)
R1241	1-216-809-11	METAL CHIP	100	5%	1/16W (TR920E/TR930)
R1241	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR820E/TR825E)
R1242	1-216-809-11	METAL CHIP	100	5%	1/16W (TR920E/TR930)
R1242	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR820E/TR825E)
R1246	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1247	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1248	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1249	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1250	1-216-864-11	METAL CHIP	0	5%	1/16W
R1251	1-216-818-11	METAL CHIP	560	5%	1/16W
R1252	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1253	1-216-818-11	METAL CHIP	560	5%	1/16W
R1254	1-216-830-11	METAL CHIP	5.6K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R1255	1-216-817-11	METAL CHIP	470	5%	1/16W
R1256	1-216-816-11	METAL CHIP	390	5%	1/16W
R1280	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1281	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1283	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR920E/TR930)
R1283	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E)
R1284	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR920E/TR930)
R1285	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR920E/TR930)
R1285	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E)
R1287	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR920E/TR930)
R1289	1-216-864-11	METAL CHIP	0	5%	1/16W
R1290	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1292	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1293	1-216-864-11	METAL CHIP	0	5%	1/16W
R1295	1-216-817-11	METAL CHIP	470	5%	1/16W
R1297	1-216-864-11	METAL CHIP	0	5%	1/16W
R1298	1-216-864-11	METAL CHIP	0	5%	1/16W
R1307	1-216-836-11	METAL CHIP	18K	5%	1/16W (TR820E/TR825E/TR920E)
R1307	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR930)
R1308	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR920E/TR930)
R1312	1-216-834-11	METAL CHIP	12K	5%	1/16W
R1313	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1314	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1315	1-216-815-11	METAL CHIP	330	5%	1/16W
R1316	1-216-815-11	METAL CHIP	330	5%	1/16W
R1321	1-218-876-11	METAL GLAZE	16K	0.50%	1/16W
R1322	1-218-847-11	METAL GLAZE	1K	0.50%	1/16W
R1323	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R1324	1-216-834-11	METAL CHIP	12K	5%	1/16W
R1330	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1331	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R1332	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E)
R1350	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR930)
R1351	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1352	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1353	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR930)
R1354	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR930)
R1355	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1356	1-216-847-11	METAL CHIP	150K	5%	1/16W (TR930)
R1357	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1358	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR930)
R1360	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR930)
R1361	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR930)
R1362	1-216-804-11	METAL CHIP	39	5%	1/16W
R1363	1-216-803-11	METAL CHIP	33	5%	1/16W
R1364	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1365	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1366	1-216-803-11	METAL CHIP	33	5%	1/16W
R1367	1-216-804-11	METAL CHIP	39	5%	1/16W
R1368	1-216-803-11	METAL CHIP	33	5%	1/16W
R1369	1-216-804-11	METAL CHIP	39	5%	1/16W
R1370	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E)
R1374	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R1377	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R1380	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E)
R1381	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR820E/TR825E)
R1383	1-216-832-11	METAL CHIP	8.2K	5%	1/16W (TR820E/TR825E)
R1390	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1391	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1403	1-216-844-11	METAL CHIP	82K	5%	1/16W
R1404	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1406	1-216-844-11	METAL CHIP	82K	5%	1/16W
R1408	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1409	1-216-820-11	METAL CHIP	820	5%	1/16W
R1410	1-216-864-11	METAL CHIP	0	5%	1/16W
R1418	1-216-844-11	METAL CHIP	82K	5%	1/16W
R1419	1-216-864-11	METAL CHIP	0	5%	1/16W
R1421	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R1422	1-216-854-11	METAL CHIP	560K	5%	1/16W
R1423	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1424	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1425	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1426	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R1461	1-216-864-11	METAL CHIP	0	5%	1/16W
R1462	1-216-864-11	METAL CHIP	0	5%	1/16W
R1476	1-216-864-11	METAL CHIP	0	5%	1/16W
R1486	1-216-810-11	METAL CHIP	120	5%	1/16W
R1487	1-216-810-11	METAL CHIP	120	5%	1/16W
R1488	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1489	1-216-817-11	METAL CHIP	470	5%	1/16W
R1490	1-216-817-11	METAL CHIP	470	5%	1/16W
R1491	1-216-817-11	METAL CHIP	470	5%	1/16W
R1492	1-216-817-11	METAL CHIP	470	5%	1/16W
R1601	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1603	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1616	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1620	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1621	1-216-798-11	METAL GLAZE	12	5%	1/16W
R1622	1-216-798-11	METAL GLAZE	12	5%	1/16W

Ref. No.	Part No.	Description			Remark
R1628	1-216-809-11	METAL CHIP	100	5%	1/16W
R1629	1-216-809-11	METAL CHIP	100	5%	1/16W
R1630	1-216-809-11	METAL CHIP	100	5%	1/16W
R1632	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1636	1-216-864-11	METAL CHIP	0	5%	1/16W
R1638	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1639	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1642	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
R1701	1-216-864-11	METAL CHIP	0	5%	1/16W
R1702	1-216-864-11	METAL CHIP	0	5%	1/16W
R1703	1-216-864-11	METAL CHIP	0	5%	1/16W
R1704	1-216-864-11	METAL CHIP	0	5%	1/16W
R1705	1-216-864-11	METAL CHIP	0	5%	1/16W
R1706	1-216-864-11	METAL CHIP	0	5%	1/16W
R1707	1-216-864-11	METAL CHIP	0	5%	1/16W
R1708	1-216-864-11	METAL CHIP	0	5%	1/16W
R1709	1-216-864-11	METAL CHIP	0	5%	1/16W
R1710	1-216-864-11	METAL CHIP	0	5%	1/16W
R1711	1-216-864-11	METAL CHIP	0	5%	1/16W
R1712	1-216-864-11	METAL CHIP	0	5%	1/16W
R1713	1-216-864-11	METAL CHIP	0	5%	1/16W
R1714	1-216-864-11	METAL CHIP	0	5%	1/16W
R1715	1-216-864-11	METAL CHIP	0	5%	1/16W
R1732	1-216-864-11	METAL CHIP	0	5%	1/16W
R1751	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1752	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1755	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1756	1-216-840-11	METAL CHIP	39K	5%	1/16W
R1757	1-216-840-11	METAL CHIP	39K	5%	1/16W
R1762	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1763	1-216-864-11	METAL CHIP	0	5%	1/16W
R1772	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1773	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1774	1-218-847-11	METAL GLAZE	1K	0.50%	1/16W
R1775	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1776	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1778	1-216-864-11	METAL CHIP	0	5%	1/16W
R1779	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1780	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1781	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1782	1-216-864-11	METAL CHIP	0	5%	1/16W
R1783	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1784	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1785	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1786	1-216-864-11	METAL CHIP	0	5%	1/16W
R1787	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1790	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1792	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1793	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1794	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1795	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1796	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1798	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1801	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1803	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)

Ref. No.	Part No.	Description			Remark
R1803	1-216-832-11	METAL CHIP	8.2K	5%	1/16W (TR820E/TR825E/TR920E)
R1804	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1805	1-216-856-11	METAL CHIP	820K	5%	1/16W
R1806	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1808	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1809	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1810	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1811	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1812	1-216-839-11	METAL CHIP	33K	5%	1/16W
R1813	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1814	1-216-864-11	METAL CHIP	0	5%	1/16W
R1815	1-216-864-11	METAL CHIP	0	5%	1/16W
R1819	1-216-843-11	METAL CHIP	68K	5%	1/16W
R1820	1-216-843-11	METAL CHIP	68K	5%	1/16W
R1821	1-216-864-11	METAL CHIP	0	5%	1/16W
R1822	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1823	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1826	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1827	1-216-839-11	METAL CHIP	33K	5%	1/16W
R1836	1-216-864-11	METAL CHIP	0	5%	1/16W
R1851	1-217-671-11	METAL CHIP	1	5%	1/10W
R1852	1-217-671-11	METAL CHIP	1	5%	1/10W
R1853	1-217-671-11	METAL CHIP	1	5%	1/10W
R1855	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1856	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1857	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1859	1-216-864-11	METAL CHIP	0	5%	1/16W
R1860	1-216-864-11	METAL CHIP	0	5%	1/16W
R1861	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1862	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1863	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1865	1-216-851-11	METAL CHIP	330K	5%	1/16W
R1867	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1868	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1869	1-216-023-00	METAL CHIP	82	5%	1/10W
R1872	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1873	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1874	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1875	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1876	1-216-819-11	METAL CHIP	680	5%	1/16W (TR820E/TR825E/TR920E)
R1876	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1877	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1878	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1878	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR820E/TR825E/TR920E)
R1880	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1881	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1882	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1883	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1884	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1887	1-216-830-11	METAL CHIP	5.6K	5%	1/16W (TR820E/TR825E/TR920E)
R1887	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)

Ref. No.	Part No.	Description			Remark
R1888	1-216-836-11	METAL CHIP	18K	5%	1/16W
R1889	1-217-671-11	METAL CHIP	1	5%	1/10W
R1890	1-217-671-11	METAL CHIP	1	5%	1/10W
R1891	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R1892	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1893	1-216-817-11	METAL CHIP	470	5%	1/16W
R1894	1-216-817-11	METAL CHIP	470	5%	1/16W
R1896	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1897	1-216-808-11	METAL CHIP	82	5%	1/16W
R1898	1-216-864-11	METAL CHIP	0	5%	1/16W
R1953	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1954	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1955	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1956	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1957	1-216-813-11	METAL CHIP	220	5%	1/16W
R1958	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1961	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1962	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1963	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1964	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1965	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1966	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1967	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1969	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1970	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1971	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1972	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1973	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1976	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1977	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1979	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1980	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1982	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1986	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1991	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2001	1-216-821-11	METAL CHIP	1K	5%	1/16W
R2010	1-216-819-11	METAL CHIP	680	5%	1/16W (TR820E/TR825E)
R2011	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2012	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2015	1-219-570-11	METAL GLAZE	10M	5%	1/16W
R2017	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2020	1-216-845-11	METAL CHIP	100K	5%	1/16W
R2021	1-216-849-11	METAL CHIP	220K	5%	1/16W
R2022	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2023	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2024	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2026	1-216-845-11	METAL CHIP	100K	5%	1/16W
R2029	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2031	1-216-817-11	METAL CHIP	470	5%	1/16W
R2036	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2037	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2038	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2044	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2046	1-216-845-11	METAL CHIP	100K	5%	1/16W
R2047	1-216-833-11	METAL CHIP	10K	5%	1/16W
R2048	1-216-853-11	METAL CHIP	470K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R2049	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R2051	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR920E/TR930)
R2056	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR920E/TR930)
R2058	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR920E/TR930)
R2060	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR920E/TR930)
R2061	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR920E/TR930)
R2062	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR920E/TR930)
R2063	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR920E/TR930)
R2064	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR920E/TR930)
R2065	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR920E/TR930)
R2070	1-217-671-11	METAL CHIP	1	5%	1/10W (TR920E/TR930)
R2071	1-217-671-11	METAL CHIP	1	5%	1/10W (TR920E/TR930)
R2074	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R2076	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR920E/TR930)
R2151	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2152	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2154	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2162	1-216-853-11	METAL CHIP	470K	5%	1/16W

< THERMISTOR >

TH1751	1-809-360-21	THERMISTOR, NTC (2125)

< VIBRATOR >

X1305	1-767-028-21	VIBRATOR, CRYSTAL (14.318MHz)(TR930)
X1305	1-767-029-21	VIBRATOR, CRYSTAL (17.734MHz)(TR920E)
X1601	1-760-320-11	VIBRATOR, CRYSTAL (28.636MHz)(TR930)
X1601	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz) (TR820E/TR825E/TR920E)
X1751	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)
X1752	1-767-030-21	VIBRATOR, CRYSTAL (11.895MHz)(TR930)
X1752	1-767-031-21	VIBRATOR, CRYSTAL (11.719MHz) (TR820E/TR825E/TR920E)
X1951	1-760-458-21	VIBRATOR, CRYSTAL (0.032798MHz)
X1952	1-579-907-21	VIBRATOR, CERAMIC (20MHz)

A-7056-774-A VF-99 (HP) BOARD, COMPLETE
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(TR820E/TR825E)
(Ref. No. 1,000 Series)

< CAPACITOR >

C901	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
C902	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C903	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C904	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C905	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V

Ref. No.	Part No.	Description			Remark
C906	1-162-638-11	CERAMIC CHIP	1uF		16V
C907	1-104-563-11	FILM CHIP	0.1uF	5%	16V
C908	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C909	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
⚠C910	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V
⚠C911	1-164-715-11	CERAMIC CHIP	0.0068uF	5%	50V
C912	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
C913	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C914	1-107-689-21	TANTAL. CHIP	1uF	20%	35V
C915	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C916	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V
		< CONNECTOR >			
CN901	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P			
CN902	1-580-057-11	PIN, CONNECTOR 4P			
		< DIODE >			
D901	8-719-951-21	DIODE PR1102W-TR			
D903	8-719-404-49	DIODE MA111			
		< IC >			
IC901	8-759-196-14	IC BA7149F-E2			
		< COIL >			
L901	1-412-031-11	INDUCTOR CHIP 47uH			
L902	1-410-387-11	INDUCTOR CHIP 33uH			
⚠L903	1-411-697-11	COIL, FERRITE (HLC)			
		< TRANSISTOR >			
Q901	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q902	8-729-106-68	TRANSISTOR 2SD1615A-GP			
Q903	8-729-216-31	TRANSISTOR 2SA1163-G			
Q904	8-729-230-63	TRANSISTOR 2SC4116-YG			
		< RESISTOR >			
R901	1-216-817-11	METAL CHIP	470	5%	1/16W
R902	1-216-817-11	METAL CHIP	470	5%	1/16W
R903	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R904	1-216-833-11	METAL CHIP	10K	5%	1/16W
R905	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R906	1-216-813-11	METAL CHIP	220	5%	1/16W
R907	1-216-845-11	METAL CHIP	100K	5%	1/16W
R908	1-216-852-11	METAL CHIP	390K	5%	1/16W
R909	1-216-833-11	METAL CHIP	10K	5%	1/16W
R910	1-216-835-11	METAL CHIP	15K	5%	1/16W
R911	1-216-160-00	METAL GLAZE	27	5%	1/8W
R912	1-216-857-11	METAL CHIP	1M	5%	1/16W
R913	1-216-820-11	METAL CHIP	820	5%	1/16W
R914	1-216-813-11	METAL CHIP	220	5%	1/16W
R915	1-216-793-11	METAL GLAZE	4.7	5%	1/16W
R916	1-218-881-11	METAL GLAZE	27K	0.50%	1/16W
R917	1-218-893-11	METAL GLAZE	82K	0.50%	1/16W
R918	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R919	1-216-839-11	METAL CHIP	33K	5%	1/16W
R920	1-216-837-11	METAL CHIP	22K	5%	1/16W
R921	1-216-795-11	METAL GLAZE	6.8	5%	1/16W
R922	1-216-847-11	METAL CHIP	150K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R923	1-216-857-11	METAL CHIP	1M	5%	1/16W
R924	1-216-862-11	METAL GLAZE	2.7M	5%	1/16W
R925	1-216-862-11	METAL GLAZE	2.7M	5%	1/16W
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W
R928	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R929	1-216-818-11	METAL CHIP	560	5%	1/16W
		< VARIABLE RESISTOR >			
RV903	1-238-852-11	RES, ADJ, CERMET 470			
RV904	1-223-566-11	RES, ADJ, METAL GLAZE 1M			
		< TRANSFORMER >			
⚠T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK			
		< THERMISTOR >			
TH901	1-809-350-21	THERMISTOR, NTC (2125)			
		< FLEXIBLE BOARD >			
⚠W901	1-540-019-21	SOCKET ASSY, CRT			

A-7073-094-A VF-111 BOARD, COMPLETE (TR930)
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A-7073-119-A VF-111P BOARD, COMPLETE (TR920E)
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(Ref. No. 5,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C851	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C852	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C853	1-104-916-11	TANTAL. CHIP	6.8uF	20%	20V
C854	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C855	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C856	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C857	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C858	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C859	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C860	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C865	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C867	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C868	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C869	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C870	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C871	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C873	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C874	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C878	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C880	1-165-128-11	CERAMIC CHIP	0.22uF		16V (TR920E)
C881	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN851	1-766-350-21	CONNECTOR, FFC/FPC 20P			
CN852	1-573-366-21	CONNECTOR, FFC/FPC 26P			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
CN853	1-573-305-11	CONNECTOR, BOARD TO BOARD 10P			
		< DIODE >			
D852	8-719-043-70	DIODE MA6S121-(TX)			
D853	8-719-802-36	DIODE 1SS250			
		< IC >			
IC851	8-759-097-75	IC MB3789PFV-G-BND-ER			
IC852	8-759-337-40	IC NJM2904V(TE2)			
IC853	8-759-337-40	IC NJM2904V(TE2)			
IC854	8-759-338-95	IC NJM2903V(TE2)			
		< COIL >			
L853	1-412-033-11	INDUCTOR CHIP 220uH			
L854	1-414-754-11	INDUCTOR 10uH			
		< TRANSISTOR >			
Q851	8-729-822-05	TRANSISTOR 2SD1622-ST-TD			
Q853	8-729-028-81	TRANSISTOR DTA123JUA-T106			
Q870	8-729-037-52	TRANSISTOR 2SD2216J-QR(TX).SO			
Q871	8-729-037-52	TRANSISTOR 2SD2216J-QR(TX).SO			
		< RESISTOR >			
R832	1-216-797-11	METAL CHIP	10	5%	1/16W
R836	1-216-809-11	METAL CHIP	100	5%	1/16W
R840	1-216-853-11	METAL CHIP	470K	5%	1/16W
R841	1-216-845-11	METAL CHIP	100K	5%	1/16W
R842	1-216-845-11	METAL CHIP	100K	5%	1/16W
R843	1-216-849-11	METAL CHIP	220K	5%	1/16W
R844	1-216-150-91	METAL GLAZE	10	5%	1/8W
R846	1-216-849-11	METAL CHIP	220K	5%	1/16W
R849	1-216-837-11	METAL CHIP	22K	5%	1/16W
R850	1-216-833-11	METAL CHIP	10K	5%	1/16W
R852	1-216-841-11	METAL CHIP	47K	5%	1/16W
R853	1-218-899-11	METAL GLAZE	150K	0.50%	1/16W
R854	1-218-901-11	METAL GLAZE	180K	0.50%	1/16W
R855	1-216-841-11	METAL CHIP	47K	5%	1/16W
R856	1-218-899-11	METAL GLAZE	150K	0.50%	1/16W
R857	1-218-903-11	METAL GLAZE	220K	0.50%	1/16W
R858	1-216-842-11	METAL CHIP	56K	5%	1/16W
R859	1-216-848-11	METAL CHIP	180K	5%	1/16W
R860	1-216-841-11	METAL CHIP	47K	5%	1/16W
R861	1-216-843-11	METAL CHIP	68K	5%	1/16W
R862	1-216-838-11	METAL CHIP	27K	5%	1/16W
R863	1-216-847-11	METAL CHIP	150K	5%	1/16W
R864	1-216-841-11	METAL CHIP	47K	5%	1/16W
R865	1-216-842-11	METAL CHIP	56K	5%	1/16W
R867	1-216-850-11	METAL CHIP	270K	5%	1/16W
R868	1-216-864-11	METAL CHIP	0	5%	1/16W
R869	1-216-843-11	METAL CHIP	68K	5%	1/16W
R870	1-216-842-11	METAL CHIP	56K	5%	1/16W
R871	1-216-850-11	METAL CHIP	270K	5%	1/16W
R872	1-216-833-11	METAL CHIP	10K	5%	1/16W
R873	1-216-851-11	METAL CHIP	330K	5%	1/16W
R874	1-216-845-11	METAL CHIP	100K	5%	1/16W
R875	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R879	1-216-837-11	METAL CHIP	22K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R880	1-216-845-11	METAL CHIP	100K	5%	1/16W
R881	1-216-853-11	METAL CHIP	470K	5%	1/16W
R882	1-216-845-11	METAL CHIP	100K	5%	1/16W
R884	1-216-838-11	METAL CHIP	27K	5%	1/16W
R885	1-216-837-11	METAL CHIP	22K	5%	1/16W
R886	1-216-841-11	METAL CHIP	47K	5%	1/16W
R887	1-216-841-11	METAL CHIP	47K	5%	1/16W
R888	1-216-841-11	METAL CHIP	47K	5%	1/16W
R891	1-216-296-91	CONDUCTOR, CHIP (3216)			
R892	1-216-168-00	METAL GLAZE	56	5%	1/8W

A-7073-095-A VF-112 BOARD, COMPLETE (TR930)
****

A-7073-120-A VF-112P BOARD, COMPLETE (TR920E)
****

(Ref. No. 5,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C901	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C902	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C903	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C905	1-162-638-11	CERAMIC CHIP	1uF		16V (TR930)
C905	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)
C907	1-162-638-11	CERAMIC CHIP	1uF		16V (TR930)
C907	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)
C908	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C909	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C910	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C911	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C912	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C913	1-162-638-11	CERAMIC CHIP	1uF		16V (TR930)
C913	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)
C914	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C916	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C917	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C918	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C919	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C920	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C921	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C922	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C924	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C925	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C927	1-107-688-11	TANTAL. CHIP	1.5uF	20%	20V
C929	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C930	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V
C931	1-216-864-11	METAL CHIP	0	5%	1/16W
C936	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C937	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)
C938	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)

Ref. No.	Part No.	Description	Remark
C939	1-164-505-11	CERAMIC CHIP 2.2uF	16V (TR920E)
C940	1-164-676-11	CERAMIC CHIP 2200PF 5%	16V
		< CONNECTOR >	
CN901	1-573-935-11	CONNECTOR, FFC/FPC (ZIF) 26P	
CN902	1-573-925-11	CONNECTOR, FFC/FPC (ZIF) 16P	
		< DIODE >	
D901	8-713-102-80	DIODE 1T369-01-T8A	
D902	8-719-060-95	DIODE CL-200IR-X-TSL-BC	
		< IC >	
IC901	8-759-427-85	IC MB88146APFV-G-BND-ER	
IC902	8-752-080-54	IC CXA1515AQ-T4	
IC904	8-752-377-97	IC CXD2411AR-T4	
		< COIL >	
L901	1-414-754-11	INDUCTOR 10uH	
L902	1-414-754-11	INDUCTOR 10uH	
L903	1-414-756-11	INDUCTOR 47uH	
L905	1-412-949-21	INDUCTOR 6.8uH	
		< TRANSISTOR >	
Q901	8-729-037-53	TRANSISTOR 2SB1462J-QR(TX).SO	
Q902	8-729-037-52	TRANSISTOR 2SD2216J-QR(TX).SO	
Q906	8-729-040-26	TRANSISTOR CPT-182S-C-TSL-CD	
		< RESISTOR >	
R901	1-216-852-11	METAL CHIP 390K 5%	1/16W
R902	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R904	1-216-852-11	METAL CHIP 390K 5%	1/16W
R905	1-216-852-11	METAL CHIP 390K 5%	1/16W
R906	1-216-837-11	METAL CHIP 22K 5%	1/16W
R907	1-216-839-11	METAL CHIP 33K 5%	1/16W
R908	1-216-837-11	METAL CHIP 22K 5%	1/16W
R909	1-216-838-11	METAL CHIP 27K 5%	1/16W
R911	1-216-839-11	METAL CHIP 33K 5%	1/16W
R912	1-216-839-11	METAL CHIP 33K 5%	1/16W
R913	1-216-839-11	METAL CHIP 33K 5%	1/16W
R914	1-216-839-11	METAL CHIP 33K 5%	1/16W
R915	1-216-833-11	METAL CHIP 10K 5%	1/16W
R917	1-216-821-11	METAL CHIP 1K 5%	1/16W
R921	1-218-905-11	METAL GLAZE 270K 0.50%	1/16W
R922	1-218-875-11	METAL GLAZE 15K 0.50%	1/16W
R923	1-216-849-11	METAL CHIP 220K 5%	1/16W
R924	1-216-837-11	METAL CHIP 22K 5%	1/16W
R934	1-216-839-11	METAL CHIP 33K 5%	1/16W
R935	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R936	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R937	1-216-840-11	METAL CHIP 39K 5%	1/16W
R938	1-216-845-11	METAL CHIP 100K 5%	1/16W
R939	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R940	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R941	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R942	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R943	1-216-839-11	METAL CHIP 33K 5%	1/16W

Be sure to read "Note on the CCD Imager replacement" on page 4—8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *************	
10	1-475-098-21	SWITCH BLOCK, CONTROL (SS-8100)	
13	1-475-099-71	SWITCH BLOCK, VTR CONTROL (FK)(TR930)	
13	1-475-099-81	SWITCH BLOCK, VTR CONTROL (FK)(TR920E)	
13	1-475-099-91	SWITCH BLOCK, VTR CONTROL (FK) (TR820E/TR825E)	
16	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR820E/TR920E/TR930)	
18	8-917-593-90	REMOTE COMMANDER (RMT-717)(TR825E)	
20	1-500-227-11	BEAD FERRITE (TR825E)	
103	1-475-160-11	SWITCH BLOCK, CONTROL	
154	1-665-149-11	FP-530 FLEXIBLE BOARD (TR920E/TR930)	
158	1-660-301-11	FP-430 FLEXIBLE BOARD (TR930)	
158	1-665-807-11	FP-505 FLEXIBLE BOARD (TR920E)	
209	1-661-547-11	FP-490 FLEXIBLE BOARD (TR820E/TR825E)	
253	1-500-227-11	BEAD, FERRITE (TR820E/TR825E)	
256	1-665-148-11	FP-527 FLEXIBLE BOARD	
257	1-660-277-11	FP-377 FLEXIBLE BOARD	
259	1-500-226-31	BEAD, FERRITE (EXCEPT TR920E:E,JE)	
260	1-665-146-11	FP-516 FLEXIBLE BOARD	
261	1-665-145-11	FP-512 FLEXIBLE BOARD	
267	1-665-142-11	FP-500 FLEXIBLE BOARD	
269	1-660-280-11	FP-380 FLEXIBLE BOARD (TR825E)	
269	1-665-681-11	FP-524 FLEXIBLE BOARD (TR920E/TR930)	
270	1-774-867-21	CONNECTOR, EXTERNAL (HOT SHOE) 8P	
301	1-660-300-11	FP-426 FLEXIBLE BOARD	
305	1-547-787-41	FILTER BLOCK, OPTICAL	
307	8-848-710-01	LENS, ZOOM (VCL-4214VA)	
313	1-694-076-21	TERMINAL BOARD, BATTERY	
316	1-500-227-11	BEAD, FERRITE (EXCEPT TR920E:E,JE)	
351	8-848-710-01	LENS, ZOOM (VCL-4214VA)	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
762	1-657-786-11	FP-221 FLEXIBLE BOARD	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
D001	8-719-988-42	DIODE GL453	
IC401	A-7030-615-A	CCD BLOCK ASSY (CCD IMAGER) (079 SERVICE)(TR930)	
IC401	A-7030-782-A	CCD BLOCK ASSY (CCD IMAGER) (211 SERVICE)(TR820E/TR825E/TR920E)	
J001	1-565-276-21	JACK, ULTRA SMALL 1P (LANC)	
J903	1-659-514-21	JACK (SMALL TYPE) 1P	
LCD902	8-753-016-10	LCX005BK-1/5 COMPLETE	
LCD903	1-801-697-11	DISPLAY PANEL, LIQUID CRYSTAL	
M901	A-7048-851-A	DRUM ASSY (DGH-0D5A-R) (TR820E/TR825E/TR920E)	
M901	A-7048-849-A	DRUM ASSY (DGH-0D4A-R)(TR930)	
M902	8-835-531-01	MOTOR, DC SCE-0601A (CAPSTAN)	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
M905	1-698-760-01	MOTOR, FOCUS STEPPING	
M906	1-698-759-01	MOTOR, ZOOM STEPPING	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MICROPHONE (R-CH)	
⚠ND801	1-517-414-21	FLUORESCENT TUB (0.55 INCH)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY) (C.C.LOCK)	
S004	1-572-467-71	SWITCH, PUSH (1 KEY) (EJECT)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	
SE451	1-810-725-71	SENSOR, ANGULAR VELOCITY (YAW)	
SE452	1-810-725-81	SENSOR, ANGULAR VELOCITY (PITCH)	
V901	1-452-673-31	CRT ASSY (M01KXX90WB)(TR820E/TR825E)	

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	1-573-291-11	CONNECTOR, CONVERSION, 21 PIN (TR820E/TR825E)	
	1-575-334-11	CORD, CONNECTION (A/V connecting cable (STEREO) 1.5m)	
	3-859-496-11	MANUAL, INSTRUCTION (ENGLISH)(TR930)	
	3-859-496-21	MANUAL, INSTRUCTION (FRENCH)(TR930:CND)	
	3-859-496-31	MANUAL, INSTRUCTION (ENGLISH,RUSSIAN)(TR820E:EE,NE,RU,UK/TR825E)	
	3-859-496-41	MANUAL, INSTRUCTION (GERMAN,ITALIAN)(TR820E:AEP/TR825E)	
	3-859-496-51	MANUAL, INSTRUCTION (SWEDISH,PORTUGUESE)(TR825E)	
	3-859-496-61	MANUAL, INSTRUCTION (FRENCH,DUTCH)(TR820E:AEP)	
	3-859-496-71	MANUAL, INSTRUCTION (POLISH,SWEDISH)(TR820E:EE,NE,RU)	
	3-859-522-11	MANUAL, INSTRUCTION (ENGLISH,RUUSSIAN) (TR920E:AUS,JE,E)	
	3-859-522-21	MANUAL, INSTRUCTION (ARABIC,PORTUGUESE) (TR920E:E)	
	3-859-522-31	MANUAL, INSTRUCTION (FRENCH,GERMAN) (TR920E:JE,E)	
	3-859-522-51	MANUAL, INSTRUCTION (CHINESE) (TR920E:JE,E)	
	3-947-969-21	BELT (S), SHOULDER	
	3-970-781-01	CASE (L), BATTERY	
	3-971-463-01	LABEL, FIRE CAUTION DISCERN (TR930:US)	
*	3-975-895-01	INDIVIDUAL CARTON (TR820E:AEP2)	
*	3-975-895-11	INDIVIDUAL CARTON (TR820E:AEP1,EE,NE,RU/TR825E)	
*	3-975-980-01	INDIVIDUAL CARTON (TR930)	
*	3-975-981-01	CUSHION (LOWER)	
*	3-975-982-01	CUSHION, ACC	
⚠	A-7009-233-A	AC POWER ADAPTOR (AC-V316)(TR930)	
⚠	A-7009-234-A	AC POWER ADAPTOR (AC-V316)(TR920E:E,JE)	
⚠	A-7009-237-A	AC POWER ADAPTOR (AC-V316)(TR920E:AUS)	
⚠	A-7009-749-A	AC POWER ADAPTOR (AC-V326) (TR820E:AEP,EE,NE,RU/TR825E)	
⚠	A-7009-750-A	AC POWER ADAPTOR (AC-V326) (TR820E:UK)	
	A-7092-699-A	CASE (L) ASSY, BATTERY (TR820E/TR825E/TR930:CND)	
	A-7092-936-A	CASE (L) ASSY (U), BATTERY (R930:US)	
**	NP-F530	BATTERY PACK	

NOTE.

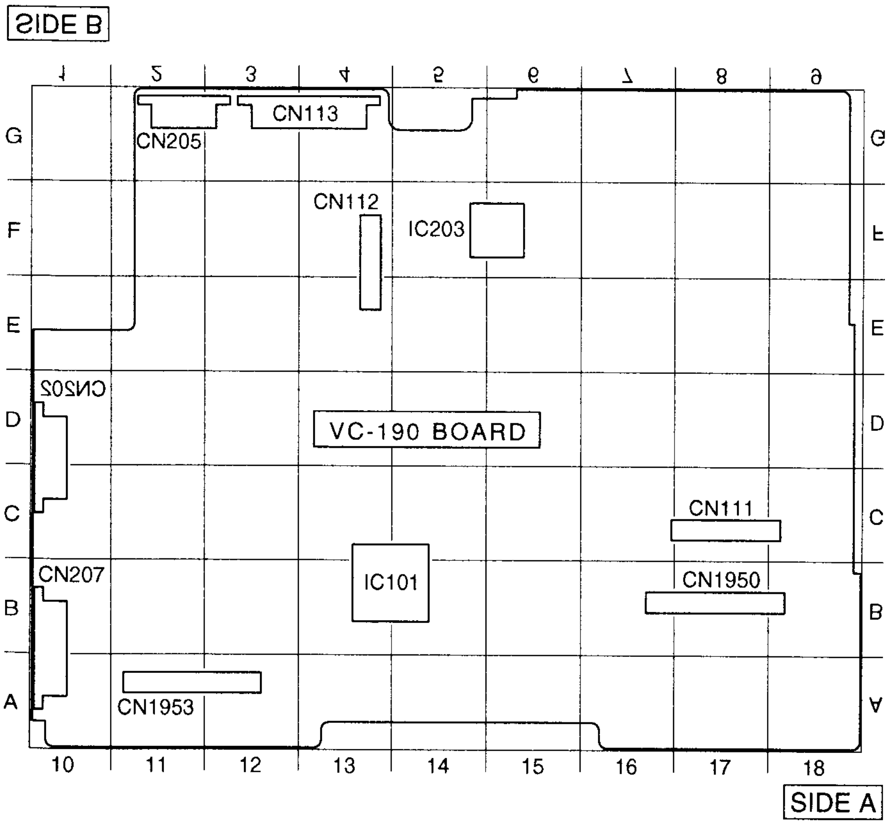
** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

<PARTS REFERENCE SHEET>

You can find the parts position of mount locations applying to boards of a set.

Take a copy CAMERA COLOR REPRODUCTION FRAME and PARTS REFERENCE SHEET with a clear sheet for use.


SIDE B
1
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3
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7
8
9
G
F
E
D
C
B
A
CN205
CN113
CN112
IC203
CN202
VC-190 BOARD
CN111
CN207
IC101
CN1950
CN1953
10
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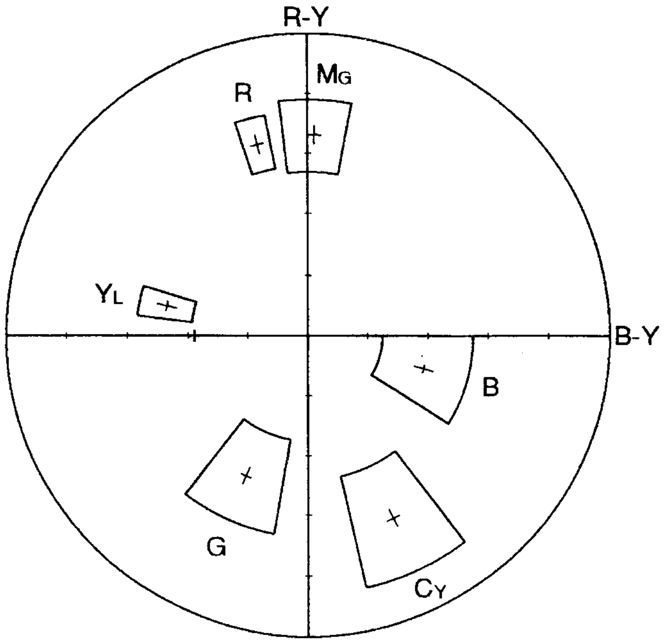
16
17
18
SIDE A

Take a copy CAMERA COLOR REPRODUCTION FRAME and PARTS REFERENCE SHEET with a clear sheet for use.

FOR CAMERA COLOR REPLRODUCTION ADJUSTMENT

For NTSC model


R-Y
MG
R
YL
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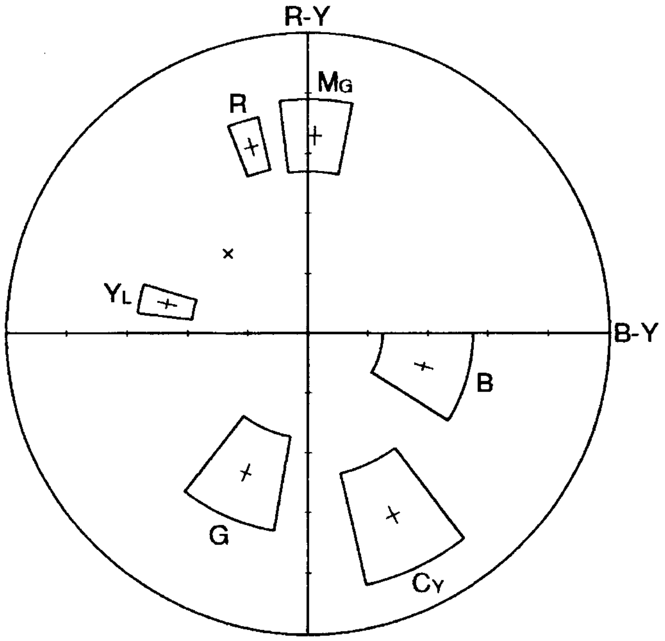
CCD-TR930

For PAL model


R-Y
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CCD-TR820E/TR825E/TR920E

Sony Corporation
Personal A&V Products Company

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